EAST WEST UNIVERSITY

Internship (Industrial Training) Report

On

Core Networking System and NOC of ICX at VOICETEL Ltd.

**As a partial fulfillment of the degree of Bachelor in
Electronics and Communication Engineering
at East West University**

Prepared By
Shahriar Hossain
ID: 2014-1-50-013
Department of Electronics & Communication Engineering
East West University

Supervised by
Dr. M. Mofazzal Hossain
Professor & Chairperson
of
Electronics & Communication Engineering Department
East West University

VOICETEL LIMITED

It is an Interconnection Exchange (ICX) operator providing following services:

♦ Routing/ Switching Inter operator Domestic Voice calls.

♦ Routing/ Switching International Calls between ANS and IGW Operators.

♦ SMS, VMS and VAS services.

♦ ENUM, IMEI and number portability Services.

♦ Special Code number, Emergency Number, Call center number

♦ Routing.

Disclaimer

This is to announce this is the internship report dependent on core networking and NOC of ICX at VOICETEL Dhaka Bangladesh. This internship report has not been submitted somewhere else for any reason.

Shahriar Hossain
ID: 2014-1-50-013
Department of ECE

Acceptance

This internship report has been presented to the department of Electronics and Communications Engineering, East West University and submitted in partial fulfillment of the requirement for degree of B.Sc. in Electronics and Telecommunication Engineering, under complete supervision of the undersigned.

Dr. M. Mofazzal Hossain

Professor & Chairperson

ECE Department

East West University

Shuvo Ranjan Dey

System Engineer

Core Network Department

Voicetel LTD.

Acknowledgement

Abstract

This report depends on the core system activities of ICX department of VOICETEL Ltd. It is an Interconnection Exchange (ICX) operator. They provide services on routing/switching inter operator domestic voice calls, routing/ switching international calls between ANS and IGW, ENUM, IMEI and number portability services, special code number, emergency number, call center number etc. They have three branches, main office is in Dhaka, others are in Chittagong and Khulna. They are performing their network management successfully.

I have worked in their core part of NOC department. For the greater part of the designing understudy it is vital to deal with a professional workplace. I have adapted such a significant number of things, similar to how to deal with the function weight despite a modern domain.

In this report I have clarified my work encounters. I have figured out how they deal with their function routine and how they check the association. At the point when association gets flopped then they have shown me how to deal with the circumstance and changed the association with other dynamic system.

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Chapter	Page

Some Short Terms Shortening

ICX-Interconnection Exchange.

IGW-International Gateway.

ANS-Access Network Services.

IIG -International Internet Gateway.

ITC-International Terrestrial Cable.

PSTN-public switched telephone network.

IPTSP-Internet Protocol Telephony Service Provider.

ILDTS-International Long Distance Telecommunications Services.

PSDN-Packet Switch Data Network.

GTS-Global Telecom Service.

UMG- Universal Media Gateway.

MML- Man-Machin Language.

LT-Location Type

TG- Trunk Group Number.

TGN-Trunk Group Name.

MN-Module Number.

SC-Start Channel.

EC-End Channel.

OPC-Originating Point Code.

DPC-Destination Point Code.

DIR-Direction.

CDR-Call Details Error.

Chapter 1

Introduction

1.1 Introduction

The advancement of Bangladesh's broadcast communications area started with little strides in 1989 with the issuance of a permit to a private administrator for the arrangement of entomb alia cell portable administrations to contend with Bangladesh Transmit and Phone Board (BTTB), the past imposing business model supplier of media communications benefits inside Bangladesh. Noteworthy changes in the quantity of settled and portable administrations conveyed in Bangladesh happened in the late 1990s and the quantities of administrations in activity have accordingly developed exponentially in the previous five years.

Telecom controllers presented an ICX based interconnection routine in 2007 and with that began another time of interconnection in Bangladesh. Correlation of advantages of when the progressions has demonstrated that ICX based course of action can be advantageous to the general interconnectivity situation. Service provider all over the world are now emphasizing on cost optimization and simplified architecture which allows adoption of future technology/ services. ICX based interconnection regime can be the solution and the potential of such model is gaining in popularity. International Telecommunications Union (ITU)'s recent publications recommend the concept of an "Interconnect Gateway Exchange" for the multi-service and multi-operator environment. The handbook recommends that nations setting up an 'Interconnect Gateway Exchange' in a multi-administrator condition can address the difficulties of multi-administrator and multi-benefit interconnection condition all the more viably and effectively.

Parts of the earlier 2008 interconnection routine in Bangladesh raised specific concerns:

a) The constrained limit of the officeholder (previous BTTB now BTCL) for interconnection with different administrators and

b) The restraining infrastructure of universal door BTTB held an imposing business model on IGW benefits in Bangladesh because of the contemporary administrative methodology. BTTB has underinvested in worldwide portal limit in a way that couldn't take care of market demand. Other than limit development was not expected to empower it to meet the fast development sought after. The imposing business model had likewise prompted abnormal amounts of illicit detour which has lessened the incomes achieved by the Government.

1.2 ICX model in Bangladesh

In the context of having an interconnection regime which harmed overall efficiency and were likely to be holding back overall access to telecommunications services in Bangladesh the policy makers introduced a new era of interconnection with ILDTS2 policy 2007. This policy is governed under the Telecom Act-2001. To implement this policy BTRC has amended the Interconnection regulation-2004 in 10th February-2008. This policy stipulates building a three-tier telecommunication infrastructure for international calls. Initially the government granted three international private sector through auction. Introduction of ICX based interconnection model brought in change in following three frameworks-

☐ Regulatory
☐ Technical
☐ Financial

1.2.1 Regulatory framework

Along with the ILDTS Policy 2007, the following is the guiding framework of interconnectivity in Bangladesh:

1. Bangladesh Telecommunication Act-2001 (as amended)
2. Interconnection Regulations-2004 (as amended)
3. Relevant directives (interim directives on MTR etc.) issued by the regulator (BTRC).

1.2.2 Technical framework

The three layers of network architecture keep the provision of International Gateway, interconnection Exchange and Internet Exchange. Services provided under these 3 layers can be translated into following kind of interconnection:

a) Interconnection for Domestic telephone service
b) Interconnection for International telephone service and
c) Interconnection for International Data service.

1.2.3 Financial framework

Previously revenue share for domestic off-net calls were done as per the pre-fixed termination rate and each operator used to bill the other for the total traffic volume (minutes) as per as respective CDR. For international calls no revenue sharing was in place. As per the ILDTS policy a certain revenue sharing arrangement is now in place among all stakeholders for international calls. Domestic termination rate and revenue sharing of it are also determined by NRA (BTRC). For domestic calls' a termination rate is still fixed by the BTRC. At present, they are conducting a cost study, the result of which is expected to be adopted by next year.

Chapter 2

Company Profile (VOICETEL Ltd.)

Voicetel is a telecommunication based Joint Venture Project of Pertex Star Group, Karnaphuli Group and Metro Group. Mr. M.A Hashem is its Honorary Advisor and Mr. Saber Hossain Chowdhury M.P is its Chairman.

There are almost 35+ employees in various departments of Voicetel.
IT INCLUDES
a) Core Network
b) Transmission Network
c) Billing Department
d) ACCOUNTS & FINANCE
e) Corporate Relationship Department.
Voicetel has 3 Operational Zone (Dhaka, Chittagong, Khulna) which are operated by Head Quarter (Dhaka) & Khulna Branch, whereas Chittagong zone is runned by Combined ICX POI.

Voicetel Neuclius Team Consist of:

a) **Saber Hossain Chowdhury**
   Chairman
b) **Aziz al Mahmood**
   Managing Director
c) **Makin Ur Rashid**
   Director
d) **Joynal Abedin C.A**
   Chief Financial Officer (CFO)
e) **Md. Sayeduth Sadath**
   Chief Technical Officer (CTO)
f) **Mustafa M Hussain**
   Chief Operating Officer (COO)

It is an Interconnection Exchange (ICX) operator providing following Services:
- Routing/ Switching Inter operator Domestic Voice calls.
- Routing/ Switching International Calls between ANS and IGW
- Operators.
- SMS, VMS and VAS services.
- ENUM, IMEI and number portability Services.
- Special Code number, Emergency Number, Call center number
- Routing.

VOICETEL LTD. has world-class network, equipment, best team and international technology partners.

VOICETEL LTD. was formed in the year 2011 by a dedicated team of professionals having wide experience in the fields of Business and Product Development.

Voicetel's objective is to make an across the country arrange going for making solid value through moderate, dependable and proficient administrations to our key accomplices through persistent mechanical development and permitting progress towards a Digital Bangladesh clearing the way for us to remain at worldwide dimension.

Voicetel's Objectives

The main objective of Voicetel Ltd. so to facilitate Telecommunications Services to public efficiently by routing calls and interconnecting Telecommunications network in Bangladesh.

Mission

Conveying best quality moderate Telecom Services to the majority of Bangladesh.

Vision

Building Infrastructure for Digital Bangladesh.

Chapter 3

Access Network Service

3.1 List of Access Network Service (ANS) Providers

In 2010, there were 6 Mobile Operators, 41 IPTSP (IP Telephone Service Providers) and 12 PSTN Operators in Bangladesh. At that point Government of Bangladesh confronted association based, income based and VOIP decrease issue. For Solving these issues. Bangladesh Telecommunication Regulatory Commission (BTRC) had presented "International Long Distance Telecommunication System" (ILDTS Policy).

3.2 Mobile Operators:

- Banglalink

- Grameenphone

- Robi/Airtel

- TeleTalk

3.3 List of IPTSP:

Sl.	Name & Address of the Licensee	License No.	Remarks
1.	Information Services Network Limited TMC Building (4th floor), 52 New Eskaton Road, Dhaka-1000, Bangladesh Contact: 8322785-8, 0189213431, Fax: 9345460 e-mail: iptsp@bangla.net, Web: www.bangla.net	BTRC/LL/IPTSP-Nationwide(2) ISN/2009-2 Dated: 18-08-2009	
2.	Agni Systems Ltd. Navana Tower (11th floor), Suite-A, 45 Gulshan Avenue, Dhaka-1212, Bangladesh Contact: 8812379, 01713075668, Fax: 8811902 e-mail: info@agni.com, Web: www.agni.com	BTRC/LL/IPTSP-Nationwide(3) Agni/2009-3 Dated: 18-08-2009	
3.	HRC Technologies Limited HR Bhaban, 26/1 Kakrail, Dhaka-1000, Bangladesh Contact: 8117752, 8119969, 01711520180 Fax: 8113319, e-mail: info@hrc-tech.net Web: www.hrc-tech.net	BTRC/LL/IPTSP-Nationwide (04)HRC/2009-11 Dated: 03-09-2009	
4.	Innovative Online Limited JibonBimaBhaban (5th floor), 56 Agrabad C/A, Chittagong-4100, Bangladesh Contact: 2526778, 2526779, 03930080542, 01713105160, 01819310483, Fax: 2510124 e-mail: anwar@iolbd.net, hasan@iolbd.net Web: www.iolbd.net NOC contact: 25101234, 03930080538	BTRC/LL/IPTSP-Nationwide(5) IOL/2009-4 Dated: 20-08-2009	
5.	Dhakacom Limited Navana Tower (7th floor), 45 Gulshan (south) C/A, Circle-1, Dhaka-1212, Bangladesh Contact: 8819252, 01713030203, Fax: 8819221 e-mail: mahakim@dhakacom.com Web: www.dhakacom.com	BTRC/LL/IPTSP-Nationwide(6) dhakacom/2009-5 Dated: 20-08-2009	
6.	Metronet Bangladesh Limited Sonartori Tower (18th floor), 12 Sonargaon Road, Dhaka-1000, Bangladesh Contact: 9897612, 9671381, Fax: 9886442 e-mail: sak@metro.net.nd, Web: www.metro.net.bd	BTRC/LL/IPTSP-Nationwide(7) Metronet/2009-18 Dated: 01-10-2009	
7.	Communication One (Pvt.) Limited 170/A Outer Circular Road, Bara Moghbazar, Dhaka, Bangladesh Contact: 01922110025, Fax: 04476000511 e-mail: info@communicaion-1.com Web: www.communication-1.com	BTRC/LL/IPTSP-Nationwide(8) C-One/2009-19 Dated: 01-10-2009	
8.	Access Telecom (BD) Ltd. Suite#.901, Concord Tower, 113 KaziNazrul Islam Avenue, Dhaka-1000, Bangladesh	BTRC/LL/IPTSP-Nationwide(9) AccessTel/2009-12	

	Contact: 9335607-10, 01711530790, Fax: 9335611 e-mail: info@accesstel.net Web: www.accesstel.net	Dated: 03-09-2009	
9.	Ranks ITT Ltd. Red Crescent Borak Tower (level-10) Contact: 9361369, 9361381, 04474700178, 04474700179, Fax: 9361349 e-mail: info@ranksitt.net, Web: www.ranksitt.net	BTRC/LL/IPTSP- Nationwide (10)Ranks ITT/2009-13 Dated: 03-09-2009	
10.	Connect BD Ltd. 20 Chamelibagh, Dhaka, Bangladesh Contact: 8816491-2, 8810069, 01713193203 Fax: 8816493, e-mail: info@connectbd.com Web: www.connectbd.com	BTRC/LL/IPTSP- Nationwide (11)ConnectBD/2009-6 Dated: 20-08-2009	
11.	BDCOM Online Ltd. House#.43 (4th floor), Road#.27 (old), 16 New Dhanmondi R/A, Dhaka-1209, Bangladesh Contact: 8125074-5, 01713331400, 01711527065 Fax: 8122789, e-mail: office@bdcom.com Web: www.bdcom.com	BTRC/LL/IPTSP- Nationwide (12)BDCom/2009-14 Dated: 03-09-2009	
12.	Broad Band Telecom Services Limited Ispahani Building (5th floor), Sk. Mujib Road, Agrabad, Chittagong Contact: 0312520550, 031252556, 031714126 Fax: 031710471, e-mail: info@bbts.net Web: www.bbts.net	BTRC/LL/IPTSP- Nationwide (13)BBTS/2009-15 Dated: 03-09-2009	
13.	Digital Connectivity Limited 20-D, 13 Topkhana Road, SegunBagicha, Dhaka- 1000, Bangladesh Contact: 01714034844 e-mail: mashhur@excel.net.bd Web: www.excel.net.bd, www.digitalconnectivity.net.bd	BTRC/LL/IPTSP- Nationwide (15)Digital/2009-7 Dated: 18-08-2009	
14.	BTS Communications (BD) Ltd. Shawpnil-4, Safeway Complex (3rd floor), Mirjajangal, Sylhet, Bangladesh Contact: 0821715361, 715395, 01730060210 Fax: 0821715361, e-mail: abdul@thekader.net Web: www.btsnet.net, www.btslink.net	BTRC/LL/IPTSP- Nationwide(18)BTS/2009-8 Dated: 20-08-2009	
15.	X-Net Limited Suite#.1103, Concord Tower, 113 KaziNazrul Islam Avenue, Dhaka-1000, Bangladesh Contact: 8321051, Fax: 9335269 e-mail: info@x-netbd.com Web: www.x-netbd.com	BTRC/LL/IPTSP- Nationwide (19)X-net/2009- 21 Dated: 01-10-2009	
16.	Royal Green Online Limited 33 Karwan Bazar, Shah Ali Tower (2nd floor), Tejgaon, Dhaka-1215, Bangladesh Contact: 8142760, 8142761, 01713043416 Fax: 8143346 e-mail: royalgreeninc@yahoo.com Web: www.royalgreen.net	BTRC/LL/IPTSP- Nationwide (20)RGOL/2009-9 Dated: 18-08-2009	
17.	Link 3 Technologies Ltd. Bulu Ocean Tower, Kemal Ataturk Avenue,	BTRC/LL/IPTSP- Nationwide (21)Link-	

	Banani, Dhaka-1213, Bangladesh Contact: 8837653-6, 9891883, 9894044, 9894500 Fax: 9888642, e-mail: info@link3.net Web: www.link3.net	3/2009-16 Dated: 03-09-2009	
18.	Bangladesh Internet Exchange Limited House#.26, Road#.28, Block-K, Banani, Dhaka-1213, Bangladesh Contact: 9888712, 01711525993, Fax: 8815490 e-mail: info@dnsgroup.net, rafel@dnsgroup.net Web: www.dnsgroup.net	BTRC/LL/IPTSP-Nationwide (22)BIEL/2009-22 Dated: 01-10-2009	
19.	Nreach Net (Pvt.) Limited Nitol Centre (12th floor), 71 Mohakhali C/A, Dhaka-1212, Bangladesh Contact: 9897974, 9897984, 01730000300 Fax: 9883131, e-mail: info@nreach.net.bd Web: www.nreach.net.bd	BTRC/LL/IPTSP-Nationwide (23)Nreach/2009-23 Dated: 01-10-2009	
20.	ADN Telecom Limited 17 Red Crescent Concord Tower (19th floor), Mohakhali C/A, Dhaka-1212, Bangladesh Contact: 8861234-8, 01817042390, Fax: 9887551 e-mail: arif@adnsl.net, Web: www.adnsl.net	BTRC/LL/IPTSP-Nationwide (24)ADNSL/2009-24 Dated: 01-10-2009	
21.	BRACNet Limited. Kaderia Tower, JA-28/8/B, Motijheel C/A, Dhaka-1212, Bangladesh Contact: 9884635, 9884637, 9884639 Fax: 9884587 e-mail: mohammad.a.rab@bracmail.net Web: www.bracnet.net	BTRC/LL/IPTSP-Nationwide (25)BRAC/2009-17 Dated: 03-09-2009	
22.	Global Access Limited Grameen Bank Bhaban (14th floor), Mirpur-2, Dhaka-1216, Bangladesh Contact: 8011597, 9011663, Fax: 9012618 e-mail: info@galbd.net, Web: www.galbd.com	BTRC/LL/IPTSP-Nationwide (29)G Access/2009-10 Dated: 20-08-2009	
23.	IDS Bangladesh Iqbal Centre (5th floor), 42 Kemal Ataturk Avenue, Banani, Dhaka-1213, Bangladesh Contact: 8817458, 9861564, Fax: 8823718 e-mail: info@idsbangladesh.net Web: www.idsbangladesh.net	BTRC/LL/IPTSP-Nationwide (30)iDS/2009-28 Dated: 11-02-2010	
24.	Bangladesh Export Import Company Limited 17 Dhanmondi R/A, Road#.2, Dhanmondi, Dhaka Contact: 8815559, 01713080060, Fax: 8815747 e-mail: admin@bol-online.com Web: www.bol-online.com Mailing & Operational Address: House-19, Road-35, Gulshan, Dhaka-1212 Contact: 8815559, Fax: 8815747 E-mail: info@bol-online.com	BTRC/LL/IPTSP-Nationwide (32)Beximco/2009-26 Dated: 05-01-2010	
25.	Pritty International (Pvt) Limited House#5/C(3rd Floor), Road#2/E, Block#J, Baridhara, Gulshan, Dhaka-1212. Contact: 8837865, 01715402025 e-mail: btrc-contact@prittynet24.com	BTRC/LL/IPTSP-Nationwide (34)Pritty/2010-30 Dated: 03-08-2010	

	Web: www.prittynet24.com		
26.	Idea Networks And Communications Ltd. 22/22 Tajmahal Road, Mohammodpur, Dhaka-1207 Contact: 9132764, 9132705, 01713043747 Fax: 9132705 e-mail: osama@ideabd.net Web: ideabd.net	BTRC/LL/IPTSP- Nationwide (35)IDEA/2010- 31 Dated: 16-09-2010	
27.	IS PROS LIMITED 41/1 KaziNazrul Islam Avenue, Kawran Bazar, Dhaka. Contact: 8126957, 8116422, 8125818 Fax: 9138054 e-mail: legal@ispros.com.bd Web: www.ispros.com.bd	BTRC/LL/IPTSP- Nationwide (36)ISPros/2010-32 Dated: 28-12-2010	
28.	ICC Communication ICC Bhaban (Ground Floor), Plot-15-18, Lane-6, Block-D, Mirpur-12, Dhaka-1216. Contact: 02 9012047, Fax: 02 8051434	BTRC/LL/IPTSP- Nationwide (37)ICC/2012- 36 Dated: 09-02-2014	
29.	HN Telecom Ltd. Osman House (2nd Floor), Rai Bahadur Road, Jaleshharitola, Bogra-5800 Contact: 051-64222, 01197-337484	BTRC/LL/IPTSP- Nationwide (38)HN Telecom/2013-33 Dated: 27-06-2013	
30.	eBangla Limited House#231, Road#12, Block-B, Mirpur-12, Pallabi, Mirpur, Dhaka-1216. Contact: 02 8080892	BTRC/LL/IPTSP- Nationwide (39)eBangla/2013-34 Dated: 31-07-2013	
31.	Next Online Limited House#.23/1A, Road-Noor Fatha Lane, Lalbagh, Dhaka, Bangladesh Contact: 8754889, 01711525770, 01713484842 Fax: 8754889, e-mail: info@nextonline.com.bd Web: www.nextonline.com.bd	BTRC/LL/IPTSP- Nationwide (40)Next Online/2013-38 Dated: 03-09-2009	
32.	Inter Cloud Ltd House#50, Road#11, Block-F, BirUttamKhadimul Bashar Sarak, Banani, Dhaka-1213. Contact: 02 8899657, Fax: 02 8899654	BTRC/LL/IPTSP- Nationwide (41)Intercloud/2013-35 Dated: 04-12-2013	
33.	Red Data (Pvt.) Limited House#5/A, Road#2, Lane-3, Block-G, Halishahar Housing Estate, Halishahar, chittagong.	BTRC/LL/IPTSP- Nationwide (41)Intercloud/2013-35 Dated: 12-08-2014	

2.2.1 IPTSP – Central

Sl	Name & Address of the Licensee	License No.	Remarks
1.	M/s. Fusion Net Navana Tower (22nd floor), 45 Gulshan Circle-1, Dhaka-1212, Bangladesh Contact: 8857502, 01727777772, Fax: 8857387 e-mail: info@fusionbd.net Web: www.fusionbd.net	BTRC/LL/IPTSP-Central Zone (4)Fusion/2009-2 Dated: 20-08-2009	
2.	M/s. Media & Multimedia House#.03, Road#.14, Sector#.01, Uttara, Dhaka-1230, Bangladesh Contact: 8954309, 8823444, 01190587172 Fax: 8813167, e-mail: musfiq@mailbangla.net Web: www.mailbangla.net	BTRC/LL/IPTSP-Central Zone (5)Media/2009-3 Dated: 03-09-2009	
3.	J F Optical Services 12/D, 25/B/9, Mirpur, Dhaka Contact: 8831899, 01713369090, Fax: 8831899 e-mail: jaglul_03@yahoo.com	BTRC/LL/IPTSP-Central Zone (7)JF/2009-5 Dated: 11-02-2010	
4.	IT Connect Limited. Planners Tower, 14th Floor, Suite#5, 13/A, Sonargaon Road, Dhaka-1000. Contact: 9670196, 9676104, 9663215. Fax: 9663215. e-mail: info@itconnectbd.com Web: www.itconnectbd.com	BTRC/LL/IPTSP-Central Zone (9)ITConnect/2010-6 Dated: 21-07-2010	
5.	Sine-10 (BD) Ltd. 50, Mohakhali C/A, Dhaka-1212. Contact: 8819140, 8819168 e-mail: info@sine-10.com. Web: www.sine-10.com	BTRC/LL/IPTSP-Central Zone (11)Sine-10/2010-7 Dated: 21-07-2010	
6.	SADIATEC Ltd. House#2, Road#7, Sector#3, Uttara, Dhaka-1230 Contact: 8919351, 8956608. Fax: 8963402 e-mail: apollo@sadiatec.com. Web: www.sadiatec.com	BTRC/LL/IPTSP-Central Zone (12)Sadiatec/2010-8 Dated: 21-07-2010	

3.2.2 IPTSP – Zonal

Sl	Name & Address of the Licensee	License No.	Remarks
1.	Chittagong Online Limited Emdad Villa, 128 Chandanpura, Chittagong Contact: 031714447, 031717437, 01713113113 Fax: 031714447 ext 107 e-mail: ceo@colbd.com, Web: www.colbd.com, www.col.com.bd	BTRC/LL/IPTSP-S E Zone(1) COL/2009-1 Dated: 18-08-2009	
2.	Chittagong Telecom Services Limited Progressive Tower (1st floor), 1837 Sk. Mujib Road, Agrabad, Chittagong Contact: 031710354, 2512607-8, 01819345608 e-mail: info@ctgtel.net, Web: www.ctgtel.net	BTRC/LL/IPTSP-S E Zone(2) CTS/2009-2 Dated: 01-10-2009	

3.3 List of PSTN :

SL	Name of Licensee and Address	Name of Zone	Issue Date
1.	Bangladesh Telecommunications Company Limited. TelejogajogBhaban, 37/E, Eskaton Garden, Dhaka-1000, Tel: 831150 Fax: 8312577	National	29-01-2004
2.	Tele Barta Ltd. Uday Tower (18th Floor), 57 & 57/A, Gulshan Avenue, Dhaka-1212, Fax: 8827867, E-mail: telebarta@dhaka.net	National	18-11-2007
3.	Ranks Telecom Limited. 113-116 Old Airport Road, Ranks Bhaban, Dhaka-1215. Phone: 8117066, 8117055, Fax: 8117788 E-mail: arc@ranksitt.net	National	09-09-2007 License Cancellation in 94th Commission Meeting of 2010 License Revalidation Date: 14-07-2011
4.	National Telecom Ltd. Mohakhali Tower (5th & 6th floor), 82 Mohakhali C/A, Dhaka-1212 Contact: 03772002423-4, 9564557, 03772000001-4, 9884320 Fax: 9564554, 9863347 e-mail: ntc@nationalphone.net Web: www.nationalphone.net	National	Cancelled in the 94th Commission Meeting. License Revalidation Date: 14-07-2011

3.4 ZONAL PSTN

SL	Name of Licensee and Address	Name of Zone	Date of Issue
1.	WorldTel Bangladesh Limited Red Crescent Tower (14th Floor), 17, Mohakhali C.A, Dhaka-1212. Tel: 8861412, Fax: 9893908.	Central Zone	13-05-2009 License Cancellation in 94th Commission Meeting of 2010 License Revalidation Date: 26-09-2011
2.	Bangla Phone Limited House No. 3, Road No. 23/A, Gulshan-1, Dhaka-1212. Tel: 9860352, 9888746, Fax: 8819981 E-mail: info@banglaphone.net	North-East	22-06-2004
3.	Jalalabad Telecom Limited UTC Building, 10th Level, 8 Panthapath, Dhaka-1215 Tel: 9110739, 9110637, Fax: 8125829 E-mail: info@jalalabad-tel.com	North-East	22-06-2004
4.	Westec Limited 52/1, New Eskaton Road, H.H Building (4th Floor), Dhaka-1000, Bangladesh. Contact: 9336564, 9352824, 9353169 Fax: 9336550 E-mail: info@bayphones.com Web: www.bayphones.com Correspondence Address: Westec Limited (Bay Phone) Plot # 16 & 18, Aftab Nagar, Main Road, Badda, Dhaka-1212, Bangladesh.	South-East	08-07-2004
5.	One Tel Communication Limited Bulu Ocean Tower (13th-15th Floor), 40 Kamal Ataturk Avenue, Banani, Dhaka-1213. Tel: 9898391, 8853164 Fax: 8860861, Ex: 223 E-mail: info@onetelbd.com	North-West	02-09-2004
6.	S.A Telecom System Ltd. Finlay House (3rd Floor), Agrabad, Chittagong. Tel: 31-815012-4, Fax: 31-815015 E-mail: sagroup@globalctg.net sagroup@abnetbd.com	South East	27-03-2005

SL	Name of Licensee and Address	Name of Zone	Date of Issue
7.	Nextel Telecom Limited PriyoPrangon Tower (Suite# 10-20), 19 Kamal Ataturk Avenue, Banani C/A, Dhaka-1213, Bangladesh. Contact: 8852609, 8957954 Fax: 8956684 E-mail: admin@nextelbd.com Web: www.nextelbd.com	South-East (Surrendered in the 15th Special Meeting of 2008 and Revived in 81st Commission Meeting)	BTRC/PSTN/Nextel/S-E/38, Dated: 13-04-2005 License Cancellation in 15th Special Commission Meeting of 2008 (Surrender): 19-10-2008 License Revalidation in 81st Commission Meeting Date : 20-12-2009

3.5 Rural PSTN

SL.	Name of Licensee and Address	Name of Zone	Date of Issue
1.	Integrated Services Limited House No. 55, Road No. 4/A, Dhanmondi R/A, Dhaka-1209. Tel: 8619452,9661173. Fax: 9670239. E-mail: info@shebanet.net	Rural	27-12-2004

Chapter 4

Historical Background of ILDTS Policy

4.1 Historical Background of ILDTS Policy

Media transmission or Telecommunications happens when the trading of data between at least two substances (correspondence) incorporates the utilization of innovation. New advances are changing the manner in which controllers need to oversee interconnection. Attentive thought of inventive thoughts can significantly enhance the productivity in multi-operator's/benefit environment.

In 2010, There were numerous ANS, IPTSP, PSTN in Bangladesh to be associated one another. In the meantime Bangladesh Government were confronting challenges to stop unlawful VOIP Call. That's why **BTRC** implemented a policy Named **"International Long Distance Transmission System" Policy (ILDTS Policy)** in 2010 and later on 2015 it was modified.

Primary explanations for ILDTS Policy were:

a) To diminish between association risk among all the ANS
    (Mobile Operators, PSTN Operators, IPTSP Operators)
b) Making Revenue Sharing Issues of ANS completely straightforward.
c) Stop Illegal VOIP Call
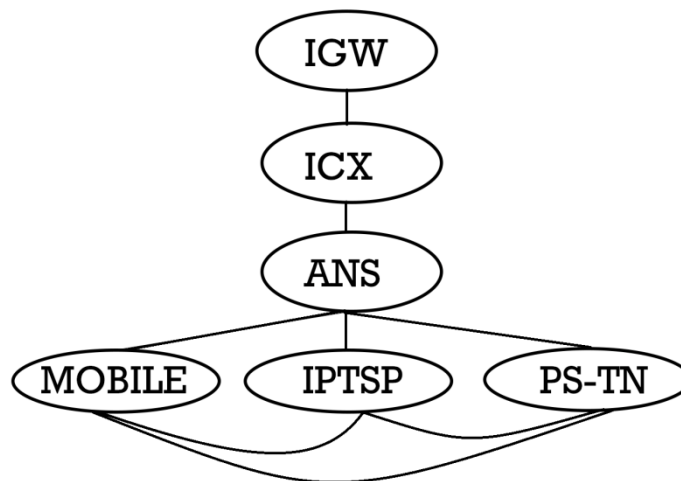
Fig 4.1: ILDTS Policy (For Voice)

Chapter 5

ICX

5.1 What is ICX?

Exchanging framework which gives interconnection among media transmission systems of administrators all together to offer simple access and permits observing, Lawful Interception (LI) facilities and roaming number portability. It is associated with ANS and IGW for call streaming. There is a switch room in ICX where each office is associated with one another coherently or physically.
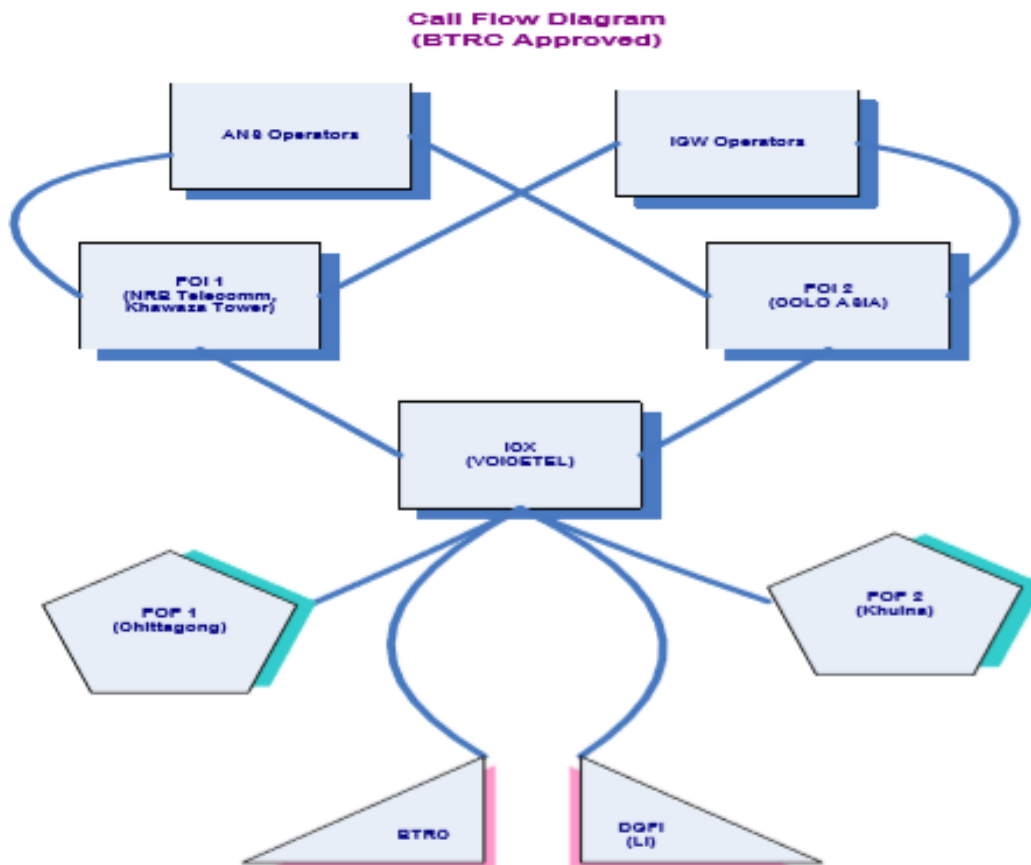
Fig 5.1: Call flow diagram
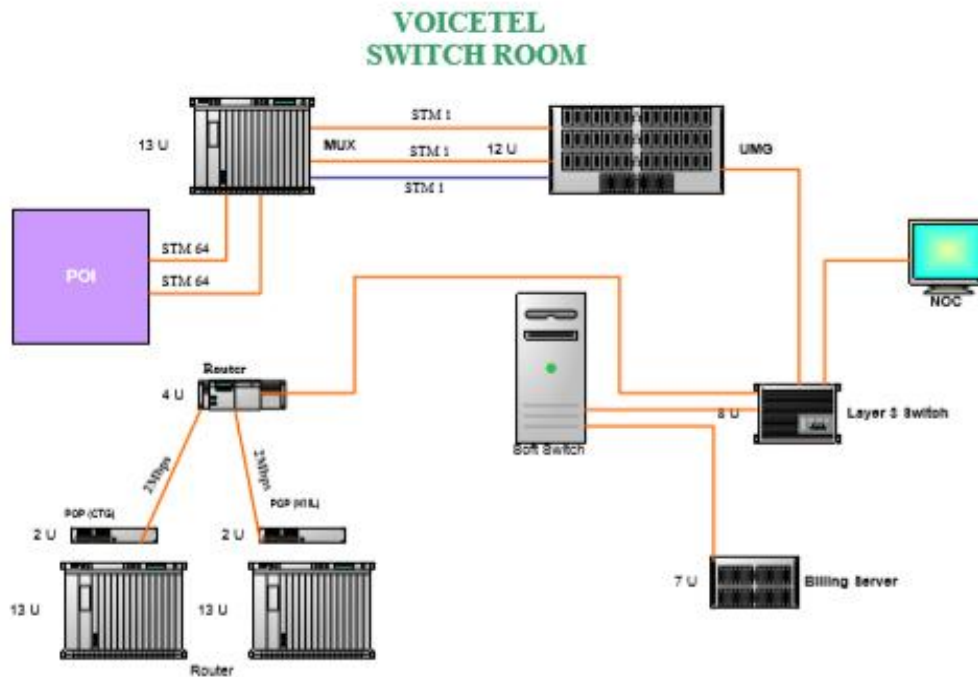
Fig 5.2: Voicetel switch room

5.2 Network Topology of ICX:

Network Architecture is based on three layers.

The first layer is International Gateway (IGW) which is connected with Sub marine cable and VSAT.

The second layer is Interconnection exchange (ICX) which is connected with IGW and Access Network Service (ANS) operators.

The third layer is the Access Network Service (ANS) operators where the subscribers are connected.

There is purpose of interconnection and purpose of essence association (Fig 4) of ANS and IGW with ICX.
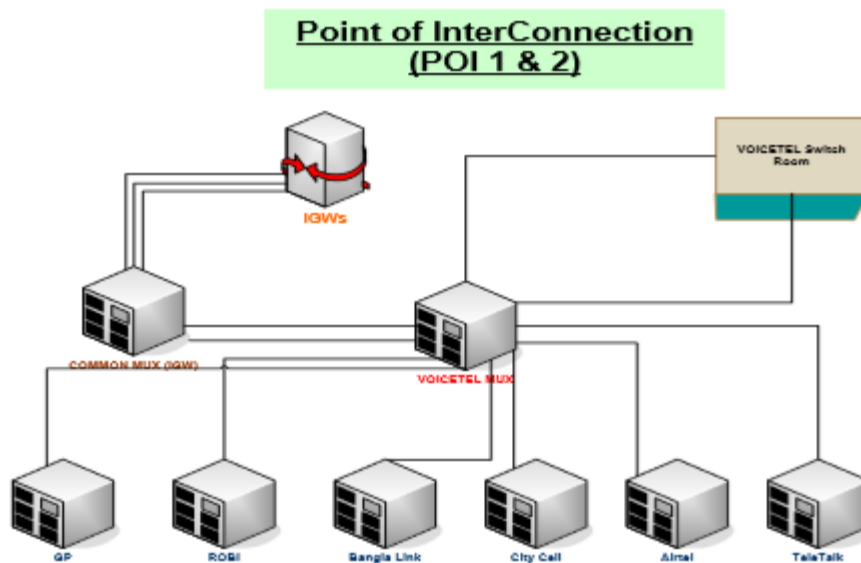
Fig 5.3: POI connection
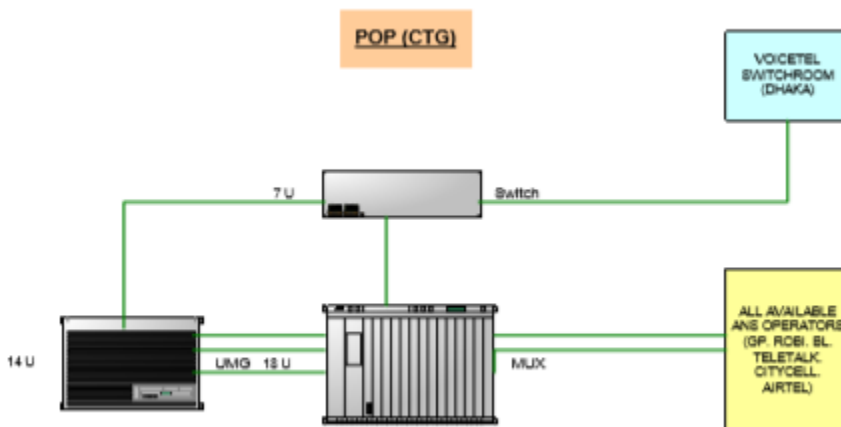
Fig 5.4: POP connection

Chapter 6

Core Networking

6.1 What is Core Network?

A center system is a media transmission system's center part, which offers various administrations to the clients who are inter connected by the entrance organize. Its key capacity is to coordinate phone brings over people in general exchanged phone arrange.

When all is said in done, this term connotes the exceedingly practical correspondence offices that interconnect essential hubs. The center system conveys courses to trade data among different sub-systems. With regards to big business arranges that serve a solitary association, the term spine is frequently utilized rather than center system, though when utilized with specialist organizations the term center system is unmistakable.

This term is otherwise called system center or spine arrange. Center system for the most part has a work topology that gives any-to-any associations among gadgets on the system which are regularly associated with general society systems.

Fig 6.1: Sub-network connection

Department of Core Network of ICX

Core network has two parts. These are-

i. UMG (Universal Media Gateway)

 ii. SS (Soft switch)
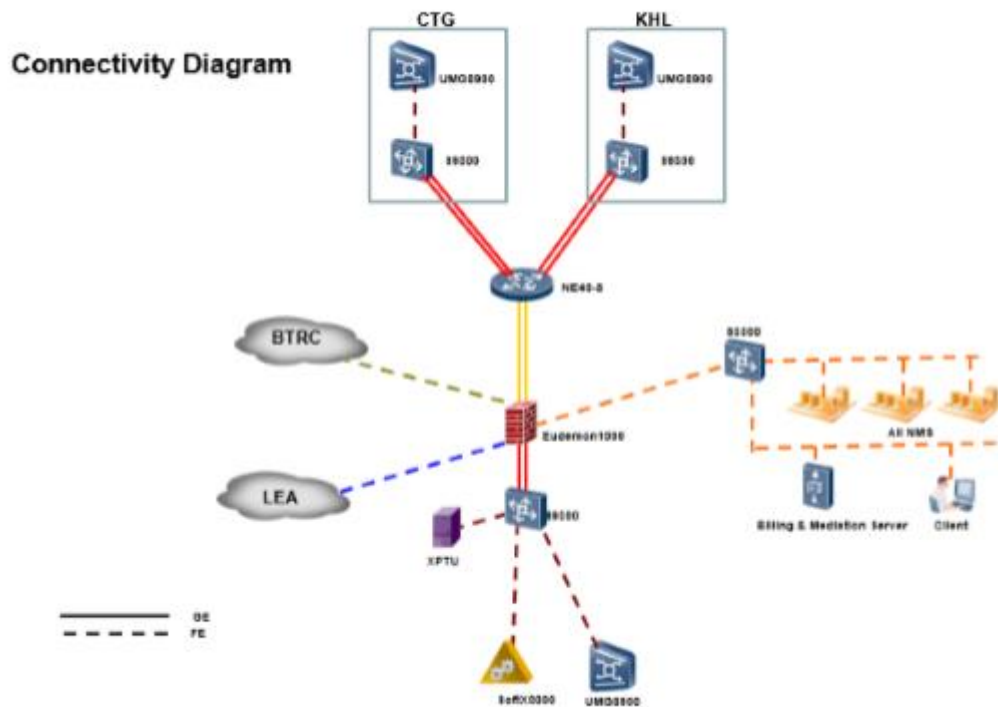
Fig 6.2: Connectivity diagram

6.2 Department of Core Network of ICX

6.2.1 UMG (Universal Media Gateway)

A Universal Media Gateway or UMG, is one of the key factors in the Access subsystem of the NGN. This is the nation's principle get to framework being utilized today due to its different capacity and in light of the fact that it is the most temperate arrangement when the telecom organize is part PSTN and part NGN.

UMG8900 has been used in Voicetel. This Universal Media Gateway (UMG) helps to migrate GSM-R services from TDM to all-IP communications, reduce TCO and protect ROI.

The UMG, together with Huawei's Mobile Switching Center (MSC) server, works together with different gadgets to help different fundamental, beneficial, and esteem included portable administrations a conventional GSM-R organize. Its rearranged system structure additionally contains worked in video systems administration and flagging connection doors. The UMG design empowers quick and adaptable presentation of new administrations.

Fig 6.3: UMG8900

6.2.2 SS (Soft Switch)

Soft Switch is a center part for settled center system arrangements. It actualizes call control and flagging and convention preparing to give essential administrations and beneficial administrations. It additionally interworks with application server (AS) to give enhanced esteem added administrations to endorsers. It can likewise work as AGCF, empowering smooth system development and ensuring administrators' current speculation.

Soft Switch is the media entryway controller. It is in charge of controlling every one of the media portals inside its zone. Delicate Switch is otherwise called SoftX. The SoftX3000 has been utilized in Voicetel. It utilizes bearer class Open Standards Telecom Architecture (OSTA) Platform as its equipment stage and uses Distributed Object situated Programmable Real time Architecture (DOPRA) as its product stage. The consoles bolster 1+1/N+1 hot reinforcement. It receives particular structure, comprising of interface module, framework bolster module, flagging preparing module, benefit handling module and Back Administration Management (BAM) module.

Fig 6.4: SoftX3000

Additional services of Soft Switch:

There works two additional services on the corresponding to soft switch.

These are:

- **GW B**
- **XPTU**

6.2.3: GWB:

IGWB abbreviation stands for International Gateway of Billing. It is saved by

- Bill format
- Data format

There are two types of IGWB.

These are:

- IGWB0
- IGWB1

XPTU:

XPTU is a monitoring server which is used for lawful interception.

Chapter 7

Management issues for call routing

7.1 Management issues for call routing

To stream the calls, there are two sorts of the executives issues.

These are:

1. Software management.

2. Hardware management.

7.1 Software management

There are mainly three types of protocols to manage software which work for call flowing.

Fig 7.1: Software management

7.1.1 Protocol Information

SS7:

Signaling System No. 7 (SS7) is a lot of communication flagging conventions created in 1975, which is utilized to set up and tear down a large portion of the world's public switched telephone network (PSTN) telephone calls. It additionally performs number interpretation, neighborhood number convey ability, prepaid charging, Short Message Service (SMS), and different mass market administrations.

Principle:

- Out of band Signaling.
- Higher Signaling data rates (56Kbps & 64 Kbps).
- Signaling traffic is burst and of short duration, hence operates in connectionless mode using packet switching.
- Variable length signal units with maximum size limitation.

Optimum use of bandwidth.

Reliability and flexibility.
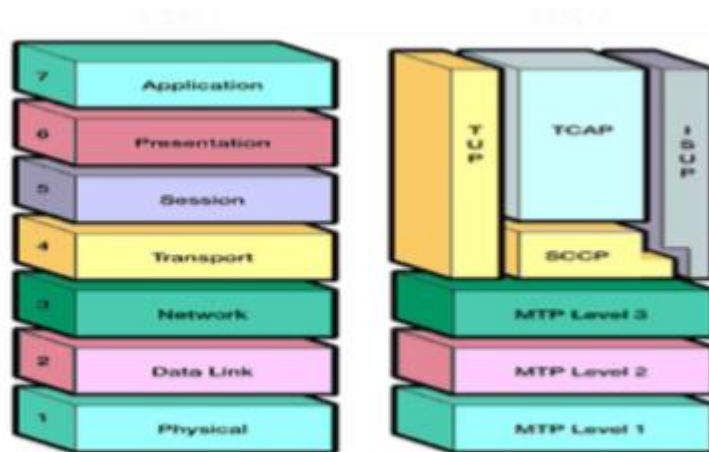
Fig 7.2: OSI and SS7 layer

SIGTRAN:

SIGTRAN is the name, derived from signaling transport, of the former Internet Engineering Task Force (IETF) working group that produced specifications for a family of protocols that provide reliable datagram service. The SIGTRAN family of protocols includes:

Stream Control Transmission Protocol (SCTP).

- ISDN User Adaptation (IUA).
- Message Transfer Part 2 (MTP) User Peer-to-Peer Adaptation Layer (M2PA).
- Message Transfer Part 2 User Adaptation Layer (M2UA).
- Message Transfer Part 3 User Adaptation Layer (M3UA).
- Signaling Connection Control Part (SCCP) User Adaptation (SUA).

- V5 User Adaptation (V5UA).
- DPNSS/DASS2 User Adaption (DUA).
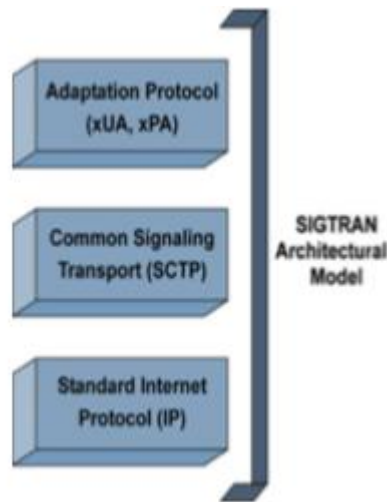
Fig 7.3: SIGTRAN Architecture Model

ISUP:

The ISDN (Integrated Services Digital Network) User Part or ISUP is part of the Signaling System No. 7 (SS7) which is used to set up telephone calls in the public switched telephone network (PSTN).

An ISUP message contains a settled header containing the circuit distinguishing proof code and the ISUP message type, trailed by a compulsory settled length parameter section, an obligatory variable-length parameter part, and a discretionary parameter part that are reliant on the kind of message being sent. ISUP messages can be sent utilizing the administrations of the Message Transfer Part, or, less regularly, the Signaling Connection Control Part. These messages are transmitted in different phases of call setup and discharge.

The most widely recognized messages are:

Initial address message (IAM) — First message sent to educate the accomplice switch that a call must be set up on the CIC contained in the message. Contains the called number, sort of administration (discourse or information) and discretionary parameters.

Subsequent address message (SAM)— For systems that help cover dialing methods, and afterward for the situation that the IAM did not contain the full called number, at least one SAMs pursue containing extra digits.

Address complete message (ACM) — Message came back from the ending switch when the endorser is come to and the telephone begins ringing, or when the consider navigates an interworking point and the middle of the road trunk is seized.

Call progress (CPG) — Contains additional information about the progress of a call. Normally sent after the ACM when the status of the call changes from that reported in the ACM.

Answer message (ANM) — Sent when the endorser gets the telephone, an asset is associated or answer supervision is returned by an interworking point. Typically charging begins as of now. It is necessitated that the call be sliced through in the two bearings by this point.

Connect (CON) — Sent when the call is answered by an automatic terminal. This message replaces the ACM, CPG and ANM for calls that are answered by automatic terminals.

Release (REL) — Sent to clear the consider when an endorser goes on snare. This is additionally sent (in direct reaction to an IAM) if the ending switch discovers that the call can't be finished. In either case, the ending switch gives a reason an incentive in the message to clarify the explanation behind the discharge, e.g., "Client occupied".

Release complete (RLC) — Acknowledgment of the release – the circuit is idle afterward and can be used again.

7.2 Hardware Management

Equipment the executives incorporates information design and gadget support. To run a framework, supporters ought to right off the bat include rack, outline, board, module and other uncommon arrangements with the information design directions as indicated by genuine equipment establishment. At the point when the framework is running, the gadget the board gives upkeep directions to endorsers of showcase the running status of the gadget, take care of issues, reestablish the typical running status and upgrade the execution of the framework.
1. Device Panel
2. Board Information of UMG
3. Board Information of SS

7.2.1 Device Panel

1. Shelf Management:

A rack contains four casings and one PDB. The framework gives the rack the board work, including adding racks to the entire NE, checking rack list, including/altering/erasing a rack, invigorating a rack, and exchanging the front and back of racks. These capacities are portrayed beneath.

Operation:

a) Adding a shelf

1- Open the Device Panel, and right click the parent node of **Device Panel Management**. A shortcut menu appears.
2- Select Add Shelf on the pop-up menu. A window for adding a shelf is displayed. Enter mandatory parameters, which are described in the table below.
3- Click **OK**.
4- You can also execute the **MML** command **ADD SHF** to implement the same function.

b) Modifying a shelf

1- Right click a shelf sub-node on the navigation tree. A shortcut menu is displayed.
2- Select **Modify Shelf**. A window for modifying the shelf appears. Modify corresponding shelf parameters, which are described in the table below.
3- Click **OK**.
4- You can also execute the **MML** command **MOD SHF** to implement the same function.

c) Removing a shelf

1- Right click a shelf sub-node on the navigation tree. A shortcut menu is displayed.
2- Select **Remove Shelf.** A window for confirmation appears. Click **Yes**.
3- You can also execute the **MML** command **RMV SHF** to implement the same function.

Note: Before deleting a shelf, you must delete all frames on the shelf.

2. Frame Management:

Double tap a sub-hub in the route tree in the gadget board, all edges are shown in the correct piece of the Gadget Board The executives window. This part is a basic rack, or straightforward gadget board window. The dark number at the left side in each edge is the quantity of the casing. The framework gives endorsers elements of casing the executives, including outline, expelling outline, altering outline, posting outline, empowering imitated outline, showing the status of on board in the edge, and show or shroud disappointment bar. Elements of casing the board are point by point in the accompanying.

Operation:

a) Adding a frame

1- In the simple panel in the right section of the **Device Panel Management** window, right click a blank frame.
2- Select **Add Frame** in the menu and enter a frame number.
3- Click **OK** to add a new frame.
4- You can also execute the MML command **ADD FRM** to implement the same function.

b) Removing a frame

1- In the simple panel in the right section of the **Device Panel Management** window, right click the border of an existing frame.
2- Select **Remove Frame** in the menu to pop up a window for confirming the operation.
3- Click **OK** to remove the frame successfully.

4- You can also execute the **MML** command **RMV FRM** to implement the same function.

Note: Before removing a frame, all boards in this frame must be removed.

c) Modifying a frame

1- In the simple panel in the right section of the **Device Panel Management** window, right click the border of an existing frame.
2- Select **Modify Frame** in the menu to pop up a window.
3- Enter parameters to set attributes to modify the frame. (The parameters are listed below).
4- Click **OK** to modify the frame.
5- You can also execute the **MML** command **MOD FRM** to implement the same function.

3. Board Management:

In the navigation panel in the left section, click TAB of the Device Panel to display all shelves of the NE. Double click a node to open the shelf and the running status of all frames and their boards is displayed.

Operation:

a) Adding a frame

1- Right click the empty slot in a frame to pop up a menu- Select **Add Board**.
2- In the window displayed, select mandatory parameters (such as Board type).Click **OK** to add a board in the specified position.
3 - You can also execute the MML command **ADD BRD** to implement the same function.

b) Removing a board

1- Right click the board in a slot of the frame.
2- Select **Remove Board** in the menu to pop up a window for confirmation Click **YES** to remove the board.
3 - You can also execute the MML command **RMV BRD** to implement the same function.

Note: To remove boards, you should remove the main control board after other boards.

c) Modifying Soft Switch

1- Right click the board in a slot of the frame.
2- Choose **Modify Software Switch of Board Loading** on the shortcut menu. Then modify the software switch of board loading in the prompted window.
3- You can also execute the MML command **MOD LSS** to implement the same function.

4. Port Management

Port management can display the status of the port on a specific board. In the system, there are four kinds of ports: E1 port, ATM port, FE port and ATM2M port. To manage ports by operating on the device management window, you must enable the emulation frame. Refer to the Frame Management for detailed operations.

Operation

Displaying port status

1- Enable the emulation frame, and right click a port on a board.

2- Select Display Port on the shortcut menu. (Pay attention to the availability of the shortcut menu)

3- A window displaying the status of the port appears, including the port type, port status, and port loop type.

4- You can execute the **MML** command **DSP PORT** to implement the same function.

5- Board Loading Process

Board Loading Process in the device panel navigation, it monitors the procedure of starting or switching the boards, in order to trace the board loading process and the loaded files.
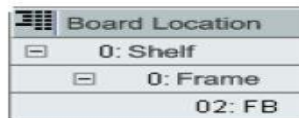
It displays the following information in a tree-like list:

- Board Location
- Load Process
- Board Type
- Load File
- Start Time

It also displays the following information in a history record list:

- Load Date
- Board Location
- Board Type
- Load File
- Start Time
- End Time

For instance, the following figure shows the board loading process of the front board in slot 2 of frame 0 in shelf 0.

Fig 7.4: Board loading process

The following figure shows the history record of the front board in slot 2 of frame 0 in shelf 0.

Fig 7.5: History record of front board

7.3: Protocol stacks of some boards:

1. Protocol stack of the BSGI:
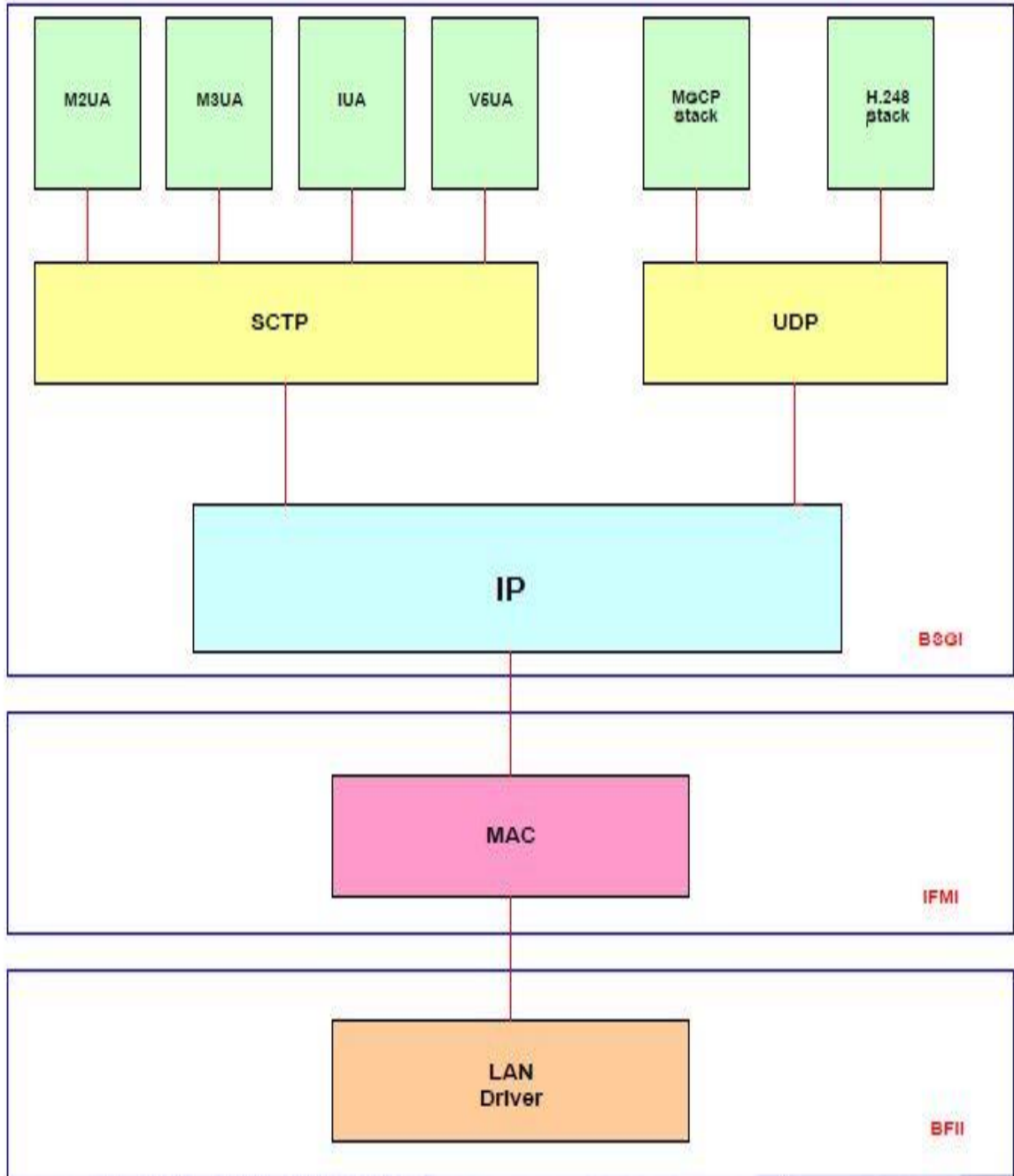
Fig 7.6: Protocol stack of the BSGI.

2. Protocol stack of MSGI:
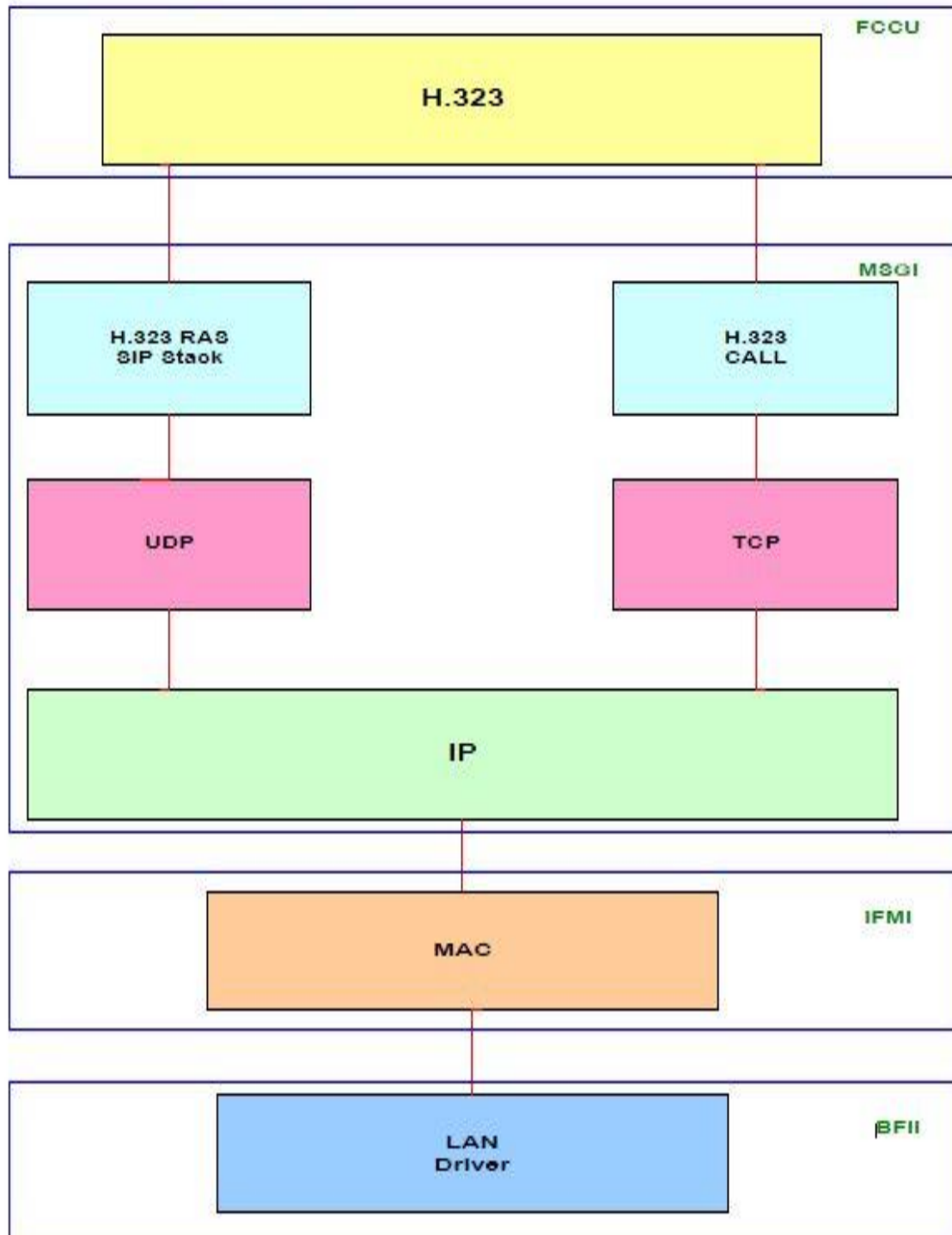
Fig 7.7: Protocol stack of the MSGI

3. Protocol stack of FCCU:
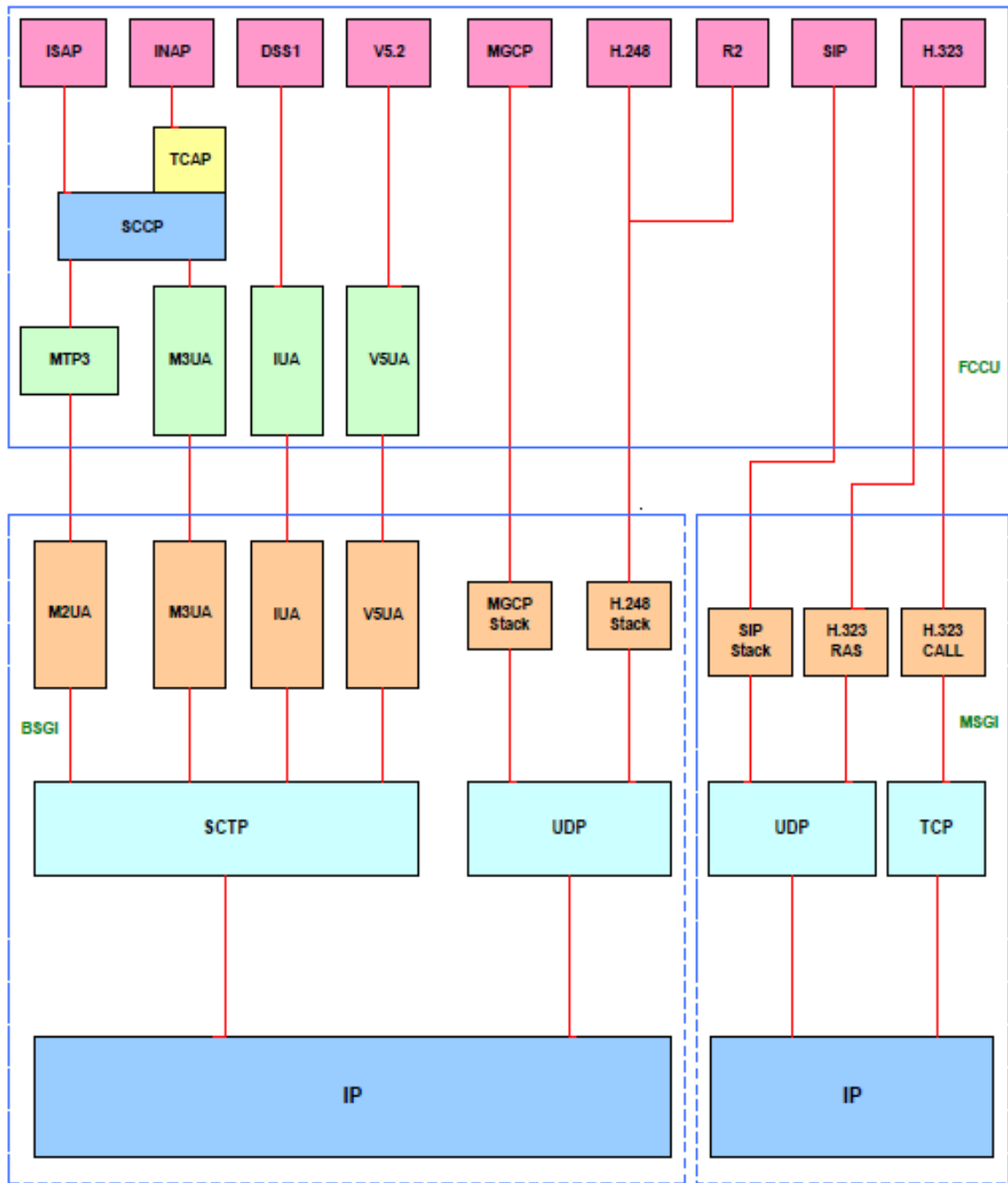
Fig 7.8: Protocol stack of the FCCU

Chapter 8

Call Flowing in hardware level

Processing Path for ISUP/INAP over MTP3/M2UA section describes the uplink path and downlink path for ISUP/INAP over MTP3/M2UA.

8.1 Uplink Path for ISUP/INAP over MTP3/M2UA
The uplink path in the SoftX3000 for ISUP/INAP over MTP3/M2UA is as shown in **Fig 8.1**
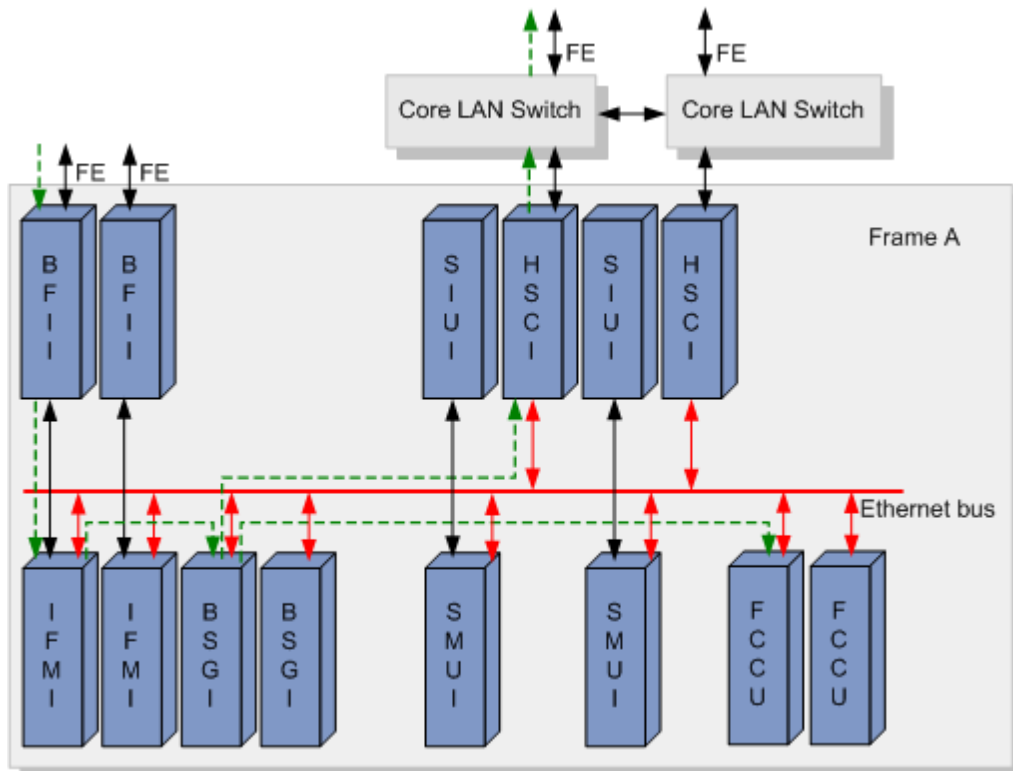
Fig 8.1: Uplink path for ISUP/INAP over MTP3/M2UA

NOTE:
If the destination BSGI and FCCU are resident in a different frame, the uplink path passes:
1. HSCI in the local frame
2. Core LAN Switch in the local frame
3. HSCI in the destination frame with the destination FCCU
4. Destination BSGI
5. Destination FCCU

1. The BFII performs the following steps:
   * Provides an external IP interface to receive IP packets.
   * Processes messages of the physical layer.
   * Transfers the packets to an IFMI through a fixed connection.

2. The IFMI processes the MAC messages, and then dispatches the messages to a designated BSGI through the Ethernet switching plane for further processing. The dispatch is based on the following:
   * IP protocol type
   * Local IP address
   * Local SCTP port number
   * Peer IP address
   * Peer SCTP port number
The mapping between the BSGI board number and the combination of the following items must be configured manually:
* IP protocol type
* Local IP address
* Local SCTP port number
* Peer IP address
* Peer SCTP port number
CAUTION:
Media Gateway Control Protocol (MGCP), H.248, and SCTP can only be processed by a BSGI rather than an MSGI or IFMI.

3. The BSGI processes IP, SCTP, M2UA, and MTP3 messages, and then transfers the messages to the ISUP and SCCP dispatch modules of the board itself. The ISUP dispatch module dispatches the received messages to the FCCU that is responsible for their CIC through the Ethernet switching plane based on the NI, OPC, DPC and CIC in the messages. The SCCP dispatch module dispatches the received messages to the FCCU that is responsible for their transactions based on the TCAP/INAP transaction ID.

4. The FCCU processes the ISUP/INAP messages.

8.2 Downlink Path for ISUP/INAP over MTP3/M2UA

The downlink path in the SoftX3000 for ISUP/INAP over MTP3/M2UA is as shown in **Fig 8.2**
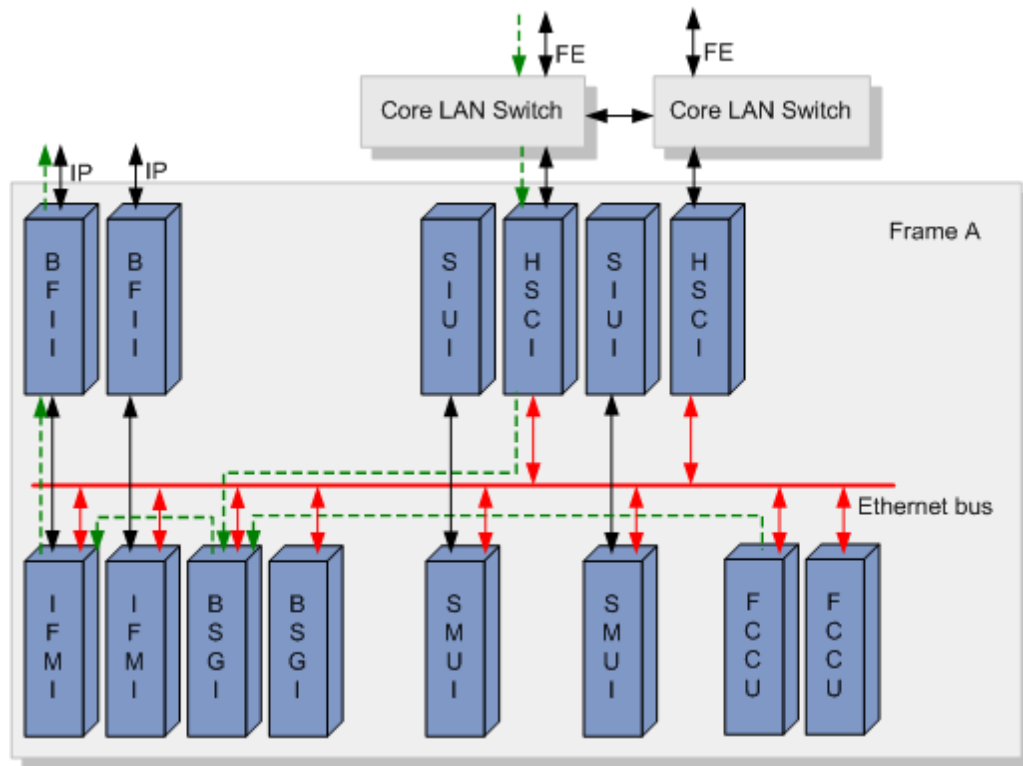
Fig 8.2: Downlink path for ISUP/INAP over MTP3/M2UA

1. The FCCU transmits received messages to a BSGI through the Ethernet switching plane based on the BSGI module number of the associated M2UA/MTP3 link.

2. The BSGI performs the following steps:
  * Processes the M2UA and MTP3 messages.
  * Determines an IFMI based on the source IP address of the IP packets.
  * Dispatches associated messages to the designated IFMI through the Ethernet switching plane.

3. The IFMI processes the MAC-layer messages, and then transfers the IP messages to a BFII through a fixed connection.

4. The IP signaling message packets are driven by the BFII then distributed out of the SoftX3000 through the network cable connected to the BFII.

Chapter 9

Basic configurations and commands in core system

9.1 Configuration for the connection of GP INTERNATIONAL (29/09/2012)

UMG CONFIGURATION:
UMG LOC: 1/3/0 Board No. 0 & UMG LOC: 1/3/2 Board No. 0
ADD MTP2LNK: LNKNO=711, LNKNAME="GP-1152-INT1", IFBT=S4L, IFBN=0,
OPN=0, E1T1N=0, STRTTS=16, ENDTS=16, SPFBN=0, SUBBN=0, BITREVERSE=OFF,
LNKTYPE=M2UA64K, LKS=136, BINIFID=711;
ADD MTP2LNK: LNKNO=712, LNKNAME="GP-1152-INT2", IFBT=S4L, IFBN=0,
OPN=0, E1T1N=1, STRTTS=16, ENDTS=16, SPFBN=1, SUBBN=0, BITREVERSE=OFF,
LNKTYPE=M2UA64K, LKS=137, BINIFID=712;
ADD MTP2LNK: LNKNO=713, LNKNAME="GP-1152-INT3", IFBT=S4L, IFBN=0,
OPN=2, E1T1N=0, STRTTS=16, ENDTS=16, SPFBN=0, SUBBN=0, BITREVERSE=OFF,
LNKTYPE=M2UA64K, LKS=136, BINIFID=713;
ADD MTP2LNK: LNKNO=714, LNKNAME="GP-1152-INT4", IFBT=S4L, IFBN=0,
OPN=2, E1T1N=1, STRTTS=16, ENDTS=16, SPFBN=1, SUBBN=0, BITREVERSE=OFF,
LNKTYPE=M2UA64K, LKS=137, BINIFID=714;

SOFTX CONFIGURATION:
ADD N7DSP: DPX=71, DPC="1152", OPC="11FD", DPNAME="GP-1152-INT";
ADD N7LKS: LSX=71, ASPX=71, LSNAME="GP-1152-INT";
ADD N7RT: LSX=71, DPX=71, RTNAME="GP-1152-INT";

ADD N7LNK: MN=136, LNKN=2, LNKNAME="GP-1152-INT1", LNKTYPE=M64K,
M2LSX=136, BINIFID=711, LSX=71, SLC=0, TID=2064;
ADD N7LNK: MN=137, LNKN=2, LNKNAME="GP-1152-INT2", LNKTYPE=M64K,
M2LSX=137, BINIFID=712, LSX=71, SLC=1, TID=2096;
ADD N7LNK: MN=136, LNKN=13, LNKNAME="GP-1152-INT3", LNKTYPE=M64K,
M2LSX=136, BINIFID=713, LSX=71, SLC=2, TID=6160;
ADD N7LNK: MN=137, LNKN=12, LNKNAME="GP-1152-INT4", LNKTYPE=M64K,
M2LSX=137, BINIFID=714, LSX=71, SLC=3, TID=6192;
ADD OFC: O=170, ON="GP-INT", DOT=INTT, DOL=LOW, DPC1="1152";
ADD SRT: SRC=1711, O=170, SRN="GP-INT-1711", RENT=URT;
ADD RT: R=171, RN="GP-INT", IDTP=UNKNOWN, NAMECFG=NO, SNCM=SRT,
SRST=SEQ, SR1=1711, STTP=INVALID, REM=NO;

ADD CALLSRC: CSC=171, CSCNAME="GP-INT", LP=0, RSSC=171;
ADD N7TG: TG=1711, TGN="GP-INT-1711", EID="10.0.10.3:2944", G=INOUT,
SRC=1711, SOPC="11FD", SDPC="1152", CSC=171, CSM=MINCIC, RCHS=0,
PRTFLG=ITUT_Q767, NOAA=FALSE, ISM=FALSE, EA=FALSE;
// ADD RTANA: RSC=2517, RSSC=23, TM=TMM, R=170;
// ADD RTANA: RSC=25, RSSC=170, TM=TMM, R=25;
// ADD CNACLD: LP=0, PFX=K'23017, CSTP=BASE, CSA=NTT, RSC=171, MINL=13,
MAXL=13, CHSC=0, EA=NO;
// ADD CNACLD: LP=0, PFX=K'25017, CSTP=BASE, CSA=NTT, RSC=2517, MINL=13,
MAXL=15, CHSC=0, EA=YES, DEST=2517, ASF=NO, QCDN=NO, OBDTMFFLAG=NO,
VPNF=NOVC;

ADD 1 STM-1 UMG LOC: 1/3/0 Board No. 0
ADD N7TKC: MN=24, TG=1711, SC=0000, EC=0319, SCIC=0000, TID="2048";
ADD N7TKC: MN=24, TG=1711, SC=0320, EC=0639, SCIC=0320, TID="2368";
ADD N7TKC: MN=24, TG=1711, SC=0640, EC=0959, SCIC=0640, TID="2688";
ADD N7TKC: MN=24, TG=1711, SC=0960, EC=1279, SCIC=0960, TID="3008";

ADD N7TKC: MN=24, TG=1711, SC=1280, EC=1599, SCIC=1280, TID="3328";
ADD N7TKC: MN=24, TG=1711, SC=1600, EC=1919, SCIC=1600, TID="3648";
ADD N7TKC: MN=24, TG=1711, SC=1920, EC=2015, SCIC=1920, TID="3968";

ADD 1 STM-1 UMG LOC: 1/3/2 Board No. 0
ADD N7TKC: MN=23, TG=231, SC=6048, EC=6367, SCIC=2016, TID="6144";
ADD N7TKC: MN=23, TG=231, SC=6368, EC=6687, SCIC=2336, TID="6464";
ADD N7TKC: MN=23, TG=231, SC=6688, EC=7007, SCIC=2656, TID="6784";
ADD N7TKC: MN=23, TG=231, SC=7008, EC=7327, SCIC=2976, TID="7104";
ADD N7TKC: MN=23, TG=231, SC=7328, EC=7647, SCIC=3296, TID="7424";
ADD N7TKC: MN=23, TG=231, SC=7648, EC=7967, SCIC=3616, TID="7744";
ADD N7TKC: MN=23, TG=231, SC=7968, EC=8063, SCIC=3936, TID="8064";

9.2 Basic commands

1. **To see running calls:** DSP OFTK
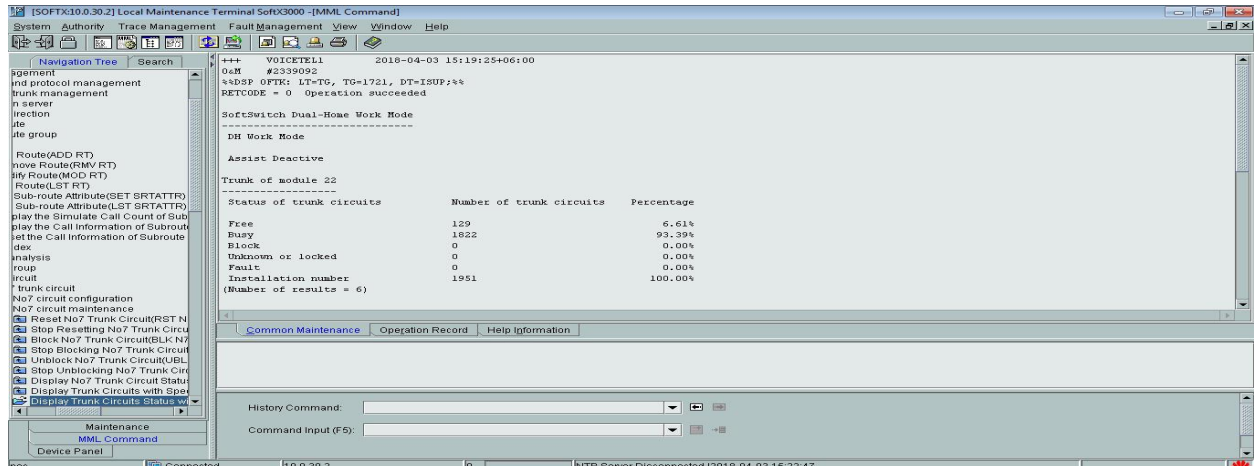
Fig 9.1: MML command for running call observation

2. **To see the trunk group number:** LST TG
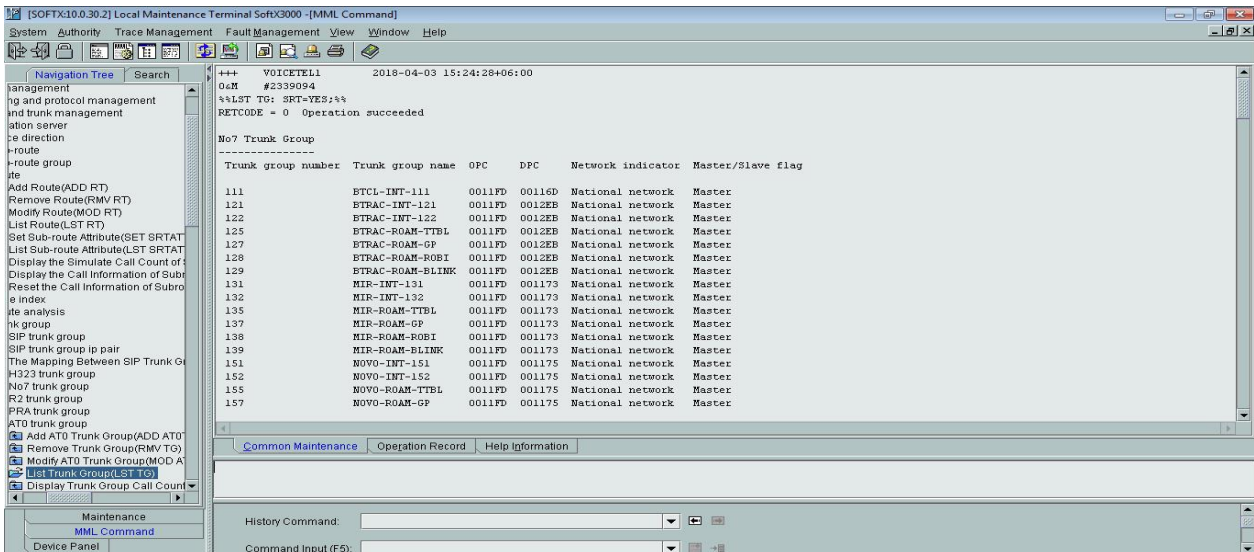
Fig 9.2: MML command for trunk group number observation

3. To know any information of any IGW's specific link
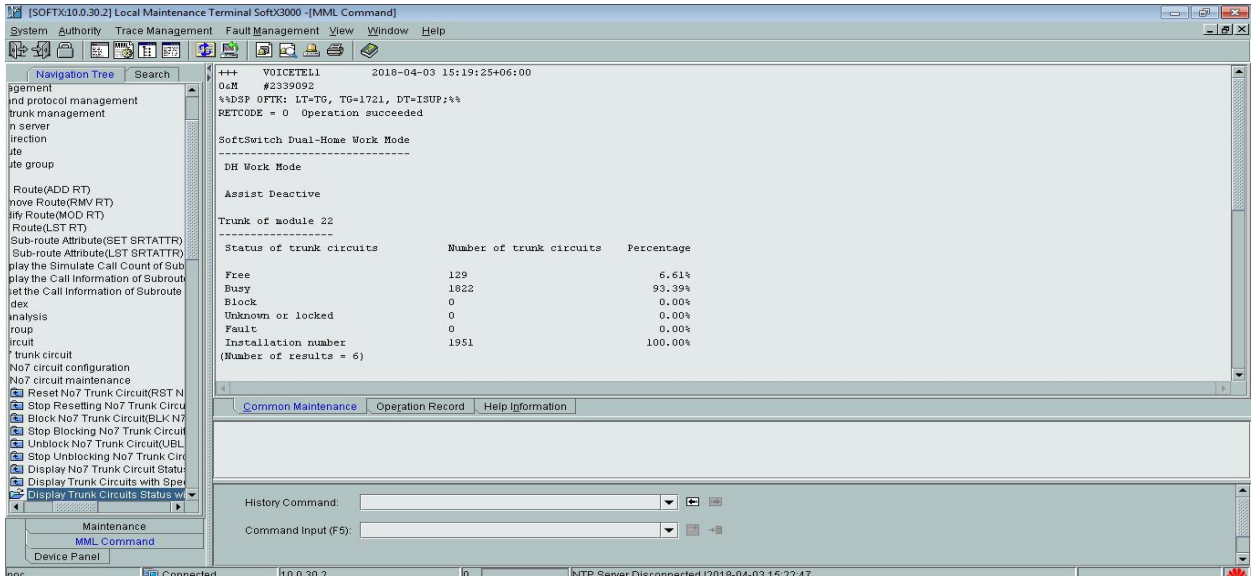
Fig 9.3: MML command for IGW's specific link observation

4. To see the start circuit and end circuit and the trunk group number:
LST CIC
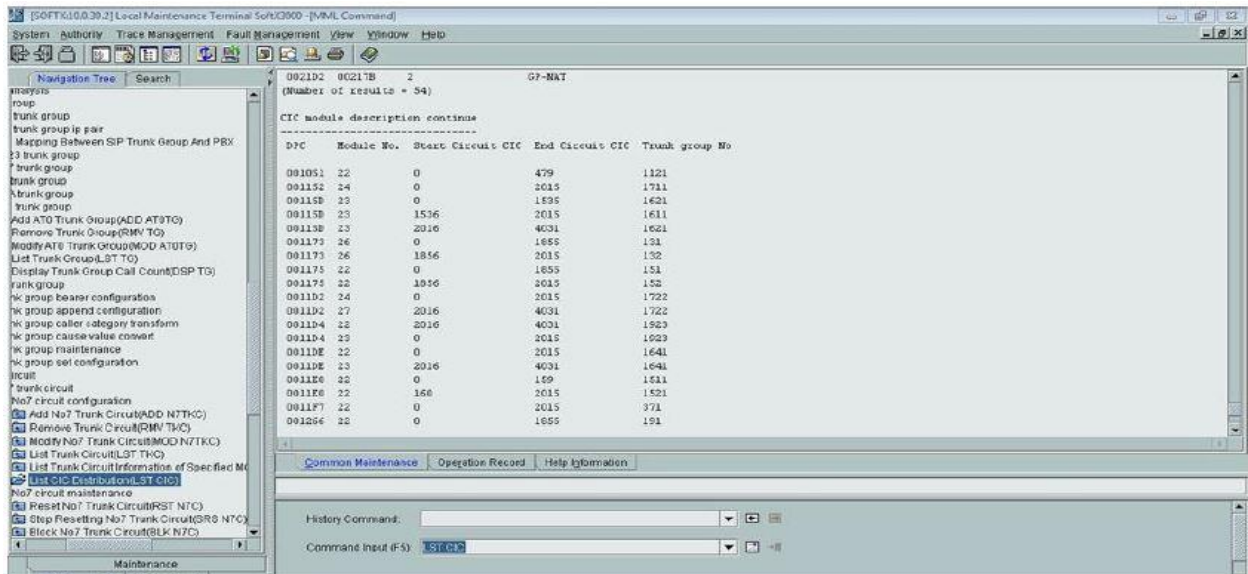
Fig 9.4: MML command for circuit and trunk group number observation

5. To see the summary of total link: LST N7LNK
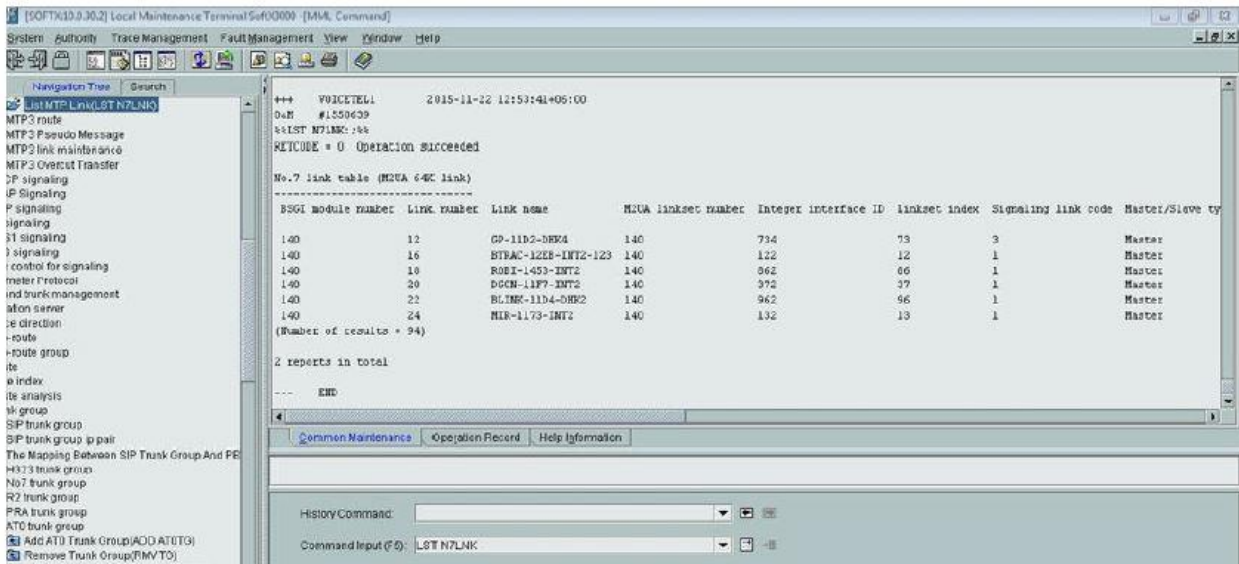
Fig 9.5: MML command for summary of total link observation

6. List route: LST RT
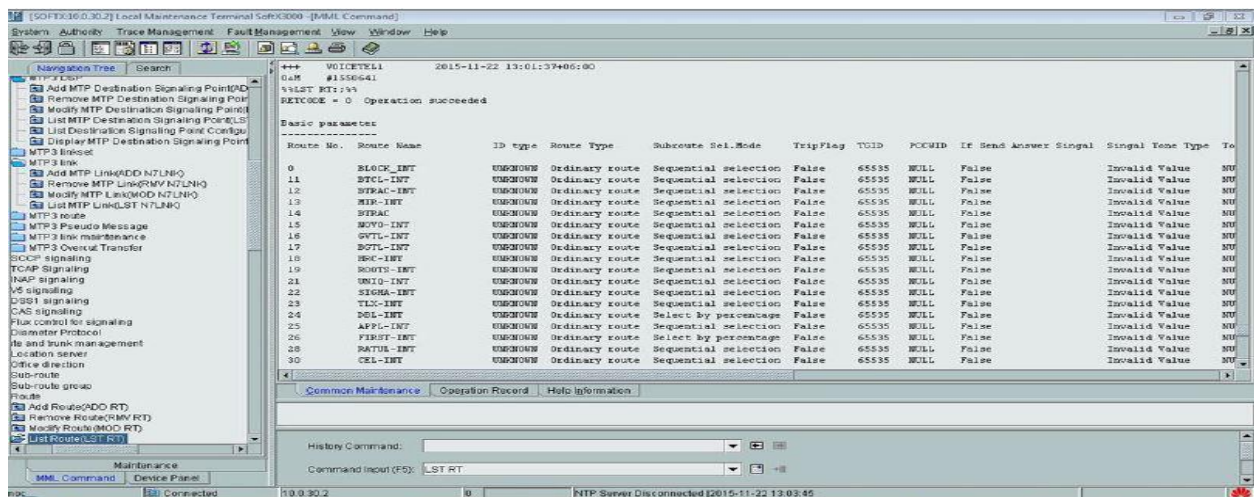
Fig 9.6: MML command for List of route observation

7. List route analysis: LST RTANA
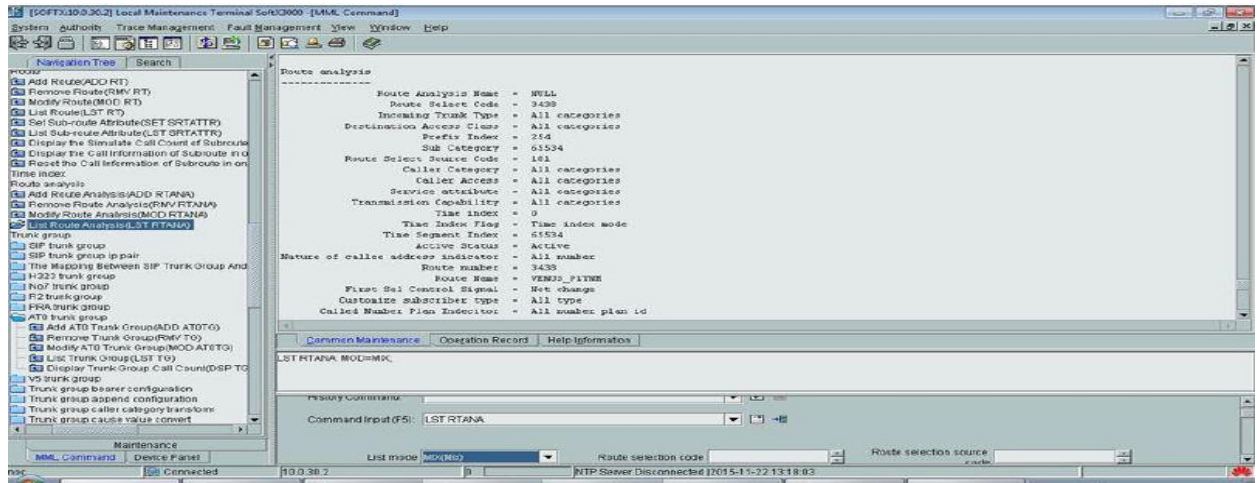
Fig 9.7: MML command for List of route analysis observation

Chapter 10

Network Operation Center (NOC)

In the practical part of my internship I worked in NOC. NOC abbreviation stands for Network Operations Center. In NOC mainly network alarms are checked. After getting alarm, maintenance are done from the NOC by the server, if it is not possible sometimes then experts take the responsibility for maintenance.

There are four types of alarm found in the NOC. These are:

1. Major alarm

2. Critical alarm

3. Minor alarm

4. Warning alarm

The figures below show the alarms of SOFTX, UMGDHK, UMG-CTG and UMG-KHL of core system respectively:

Figure : Alarms of SOFTX

Figure : Alarms of UMG-DHK

Figure : Alarms of UMG-CTG

Figure : Alarms of UMG-KHL

Apart these there are monitoring issues also.

10.1 Routine Parameters:

CER/CSSR (Call Set up Success Rate): It is the division of the endeavors to make a call that outcome in an association with the dialed number (because of different reasons not all call endeavors end with an association with the dialed number). This portion is generally estimated as a level of all call endeavors made.

ASR (Answering Ratio): The answer-seizure ratio (**ASR**) is an estimation of system quality and call achievement rates in media communications. It is the level of addressed phone calls regarding the aggregate call volume.

ACD (Average Call Duration): The **average call duration** (ACD) is an estimation in broadcast communications that mirrors a normal length of phone calls transmitted on media transmission systems. The estimation is commonly founded on the announcing by media transmission hardware by means of call detail records.

10.2 Routine Parameter Check:

1) Hourly Check
2) 24 Hours Analysis
3) Trunk Performance Analysis

10.2.1 Hourly Check:

1) Top-30 route analysis:

Mainly there are 30 countries where outgoing calls are passed through IGW via ICX. The destinations (IGWs) are selected by the ICX according to IGWs performance. Performance is measured by some parameters which are shown in **Fig 10.1**. These are:

* Attempt- number of calls per 15 minutes

* CER- Call Established Ratio

* ASR- Average Success Ratio (connected + received)

* ACD- Average Call Duration (averagely calling time in second)

Fig 10.1: top 30 list

Country Name	Country Prefix	BTRAC (12)				ROOTS (19)				UNIQUE (21)				Global Voice(16)				MIR (13)				NOVO(15)				DIGICON(37)				ROUTE S	
		Attempt	CER	ASR	ACD	Attempt	CER	ASR	ACD	Attempt	CER	ASR	ACD	Attempt	CER	ASR	ACD	Attempt	CER	ASR	ACD	Attempt	CER	ASR	ACD	Attempt	CER	ASR	ACD	BY ASR	BY ACD
France	0033	3	100%	100%	64	3	67%	33%	6	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	12	12
Italy	0039	89	97%	11%	6	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	12	12
Great Britain	0044	0	0%	0%	0	21	76%	19%	8	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	21	81%	10%	37	19	19
Malaysia	0060	0	0%	0%	0	0	0%	0%	0	749	98%	2%	50	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	750	96%	9%	29	12	12
Australia	0061	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	42	95%	45%	18	12	12
Singapore	0065	0	0%	0%	0	250	92%	4%	23	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	19	19
Thailand	0066	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	8	100%	25%	69	12	12
South Korea	0082	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	25	100%	8%	44	12	12
China	0086	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	14	93%	36%	48	12	12
India	0091	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	126	94%	13%	67	131	92%	11%	163	0	0%	0%	0	0	0%	0%	0	16	13
# Pakistan	0092	0	0%	0%	0	18	100%	0%	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	12	12
Sri Lanka	0094	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	12	12
Libya	00218	1	0%	0%	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	20	80%	15%	11	12	12
Lebanon	00961	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	33	97%	18%	70	0	0%	0%	0	0	0%	0%	0	13	13
Jordan	00962	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	31	97%	16%	58	12	12
Iraq	00964	0	0%	0%	0	10	90%	0%	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	12	12
Kuwait	00965	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	250	92%	4%	66	12	12
Saudi Arabia	00966	512	92%	21%	14	0	0%	0%	0	131	89%	13%	14	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	12	12
Oman	00968	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	640	94%	21%	11	0	0%	0%	0	15	15
UAE	00971	705	92%	13%	19	0	0%	0%	0	170	94%	6%	6	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	0	0%	0%	0	12	12

Fig 10.2: top 30 list hourly check

Fig 10.3: top 30 list hourly check

2) IGW to ANS

- o Performance of incoming calls from IGW to ANS are monitored here.
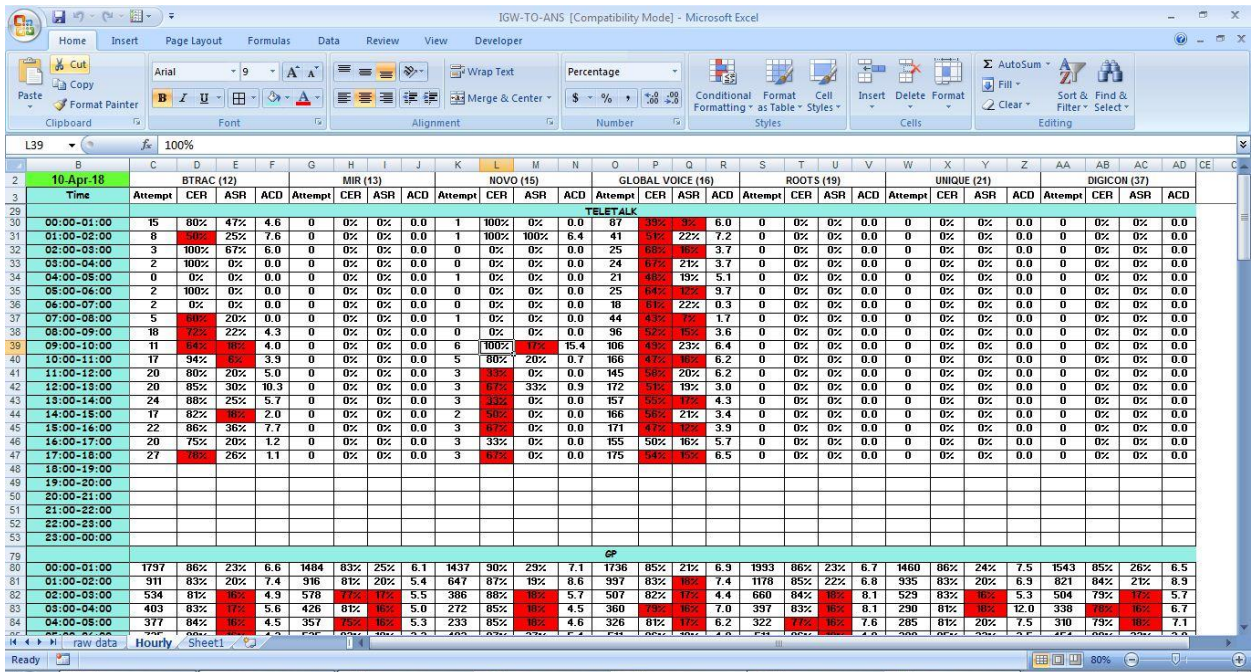- o It is monitored per hour.

Fig 10.4: IGW to ANS

Fig 10.5: IGW to ANS

3) Temperature Reading

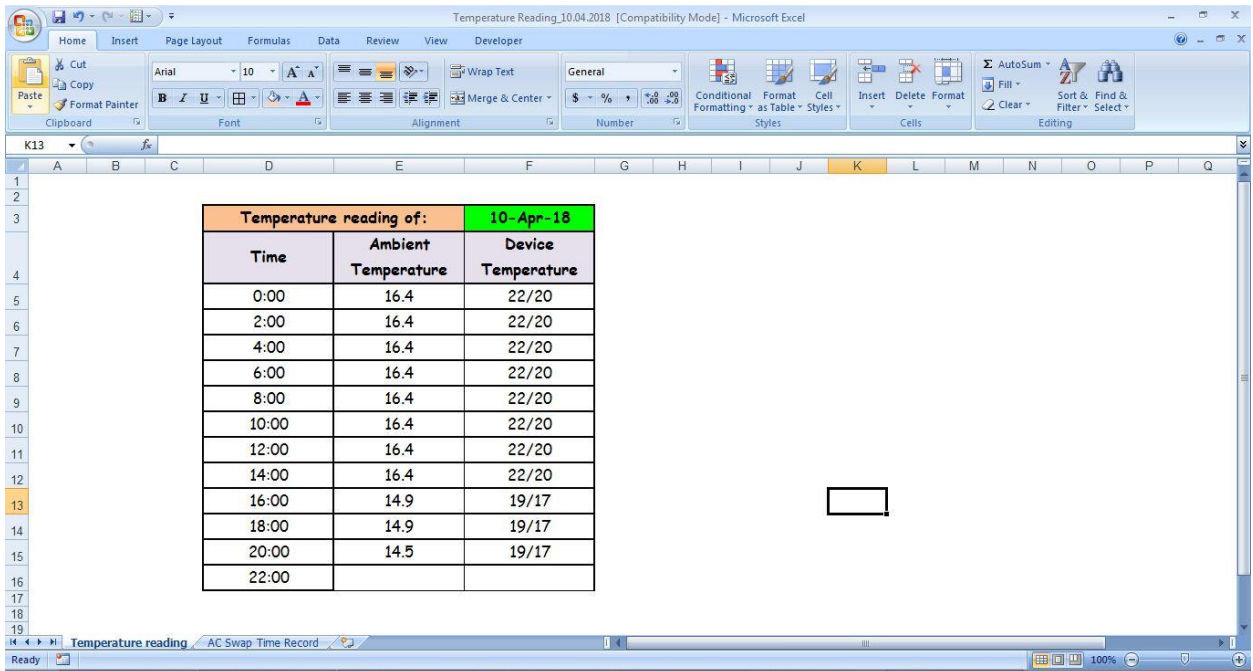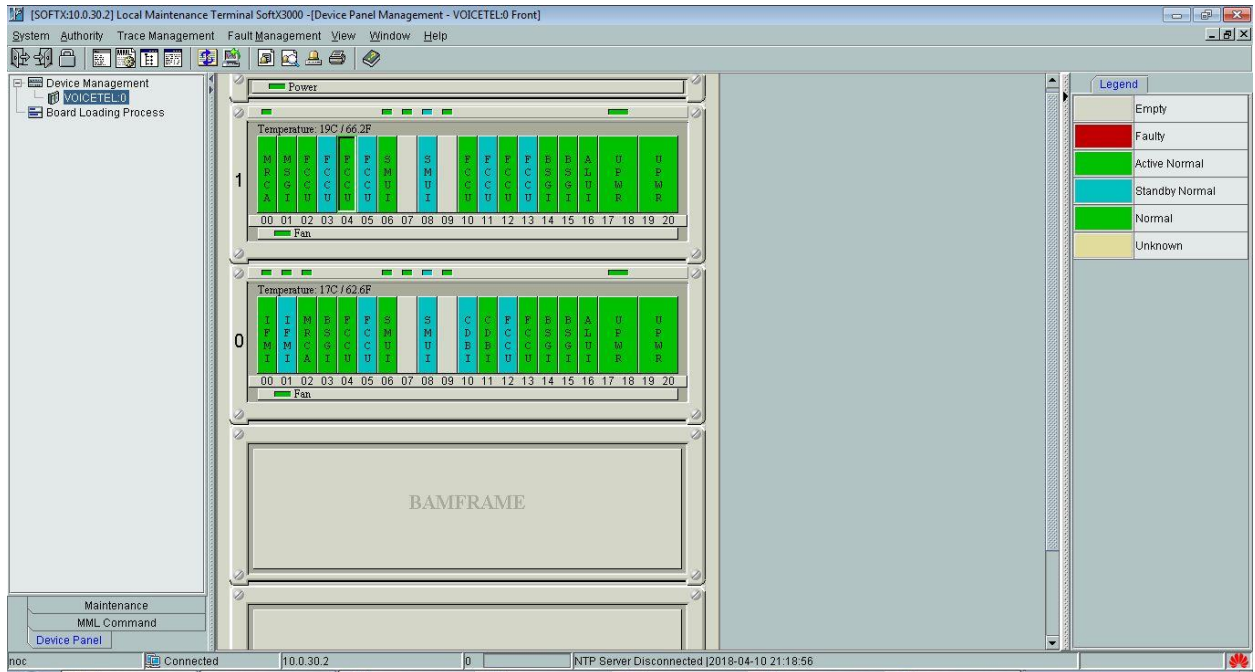Fig 10.6: Temperature Reading

Fig 10.7: Temperature Reading

4) All Traffic

   - Incoming

   - Outgoing

To keep network stable we need to maintain routine checkup of few parameters. For analysis
We transform the parameters into report.

10.2.2 24 Hours Analysis:

All destination Performance: All Countries Performances are Analyzed here in a nutshell.
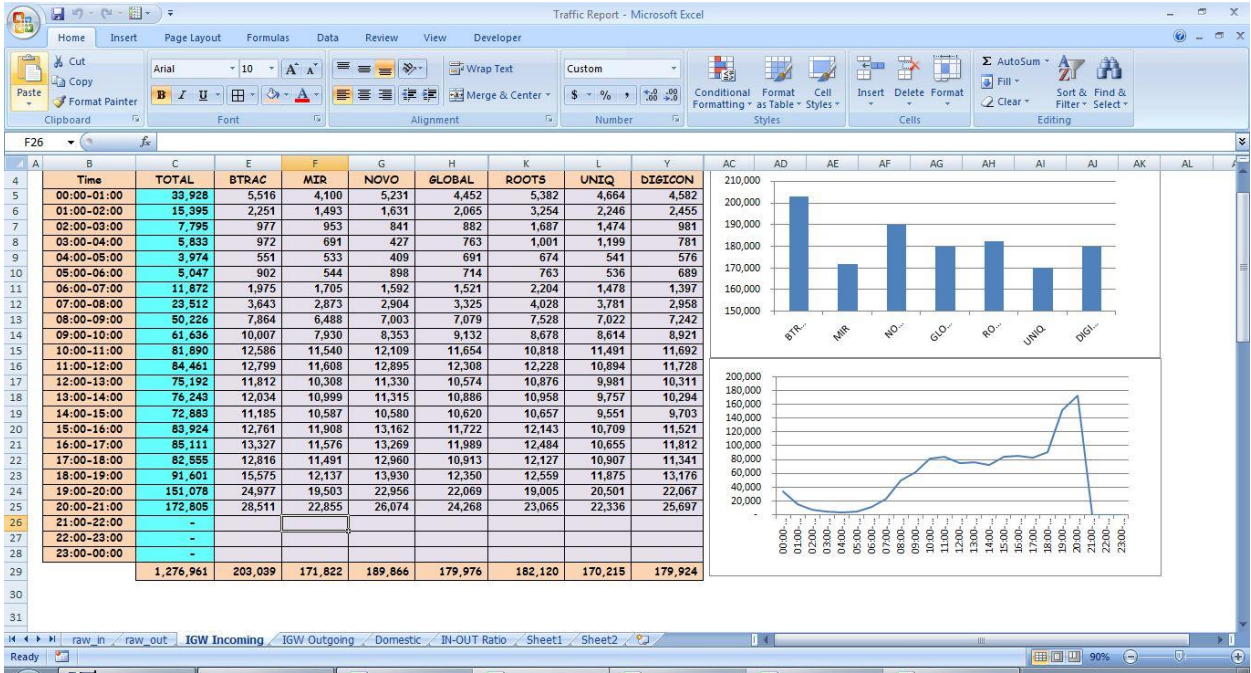
Daily Domestic Traffic:

- incoming

Time	TOTAL	BTRAC	MIR	NOVO	GLOBAL	ROOTS	UNIQ	DIGICON
00:00-01:00	33,928	5,516	4,100	5,231	4,452	5,382	4,664	4,582
01:00-02:00	15,395	2,251	1,493	1,631	2,065	3,254	2,246	2,455
02:00-03:00	7,795	977	953	841	882	1,687	1,474	981
03:00-04:00	5,833	972	691	427	763	1,001	1,199	781
04:00-05:00	3,974	551	533	409	691	674	541	576
05:00-06:00	5,047	902	544	898	714	763	536	689
06:00-07:00	11,872	1,975	1,705	1,592	1,521	2,204	1,478	1,397
07:00-08:00	23,512	3,643	2,873	2,904	3,325	4,028	3,781	2,958
08:00-09:00	50,226	7,864	6,488	7,003	7,079	7,528	7,022	7,242
09:00-10:00	61,636	10,007	7,930	8,353	9,132	8,678	8,614	8,921
10:00-11:00	81,890	12,586	11,540	12,109	11,654	10,818	11,491	11,692
11:00-12:00	84,461	12,799	11,608	12,895	12,308	12,228	11,491	11,728
12:00-13:00	75,192	11,812	10,308	11,330	10,574	10,876	9,981	10,311
13:00-14:00	76,243	12,034	10,999	11,315	10,886	10,958	9,757	10,294
14:00-15:00	72,883	11,185	10,587	10,580	10,620	10,657	9,551	9,703
15:00-16:00	83,924	12,761	11,908	13,162	11,722	12,143	10,709	11,521
16:00-17:00	85,111	13,327	11,576	13,269	11,989	12,484	10,655	11,812
17:00-18:00	82,555	12,816	11,491	12,960	10,913	12,127	10,907	11,341
18:00-19:00	91,601	15,575	12,137	13,930	12,350	12,559	11,875	13,176
19:00-20:00	151,078	24,977	19,503	22,956	22,069	19,005	20,501	22,067
20:00-21:00	172,805	28,511	22,855	26,074	24,268	23,065	22,336	25,697
21:00-22:00	-							
22:00-23:00	-							
23:00-00:00	-							
	1,276,961	203,039	171,822	189,866	179,976	182,120	170,215	179,924

Fig 10.8: Daily Domestic Traffic incoming
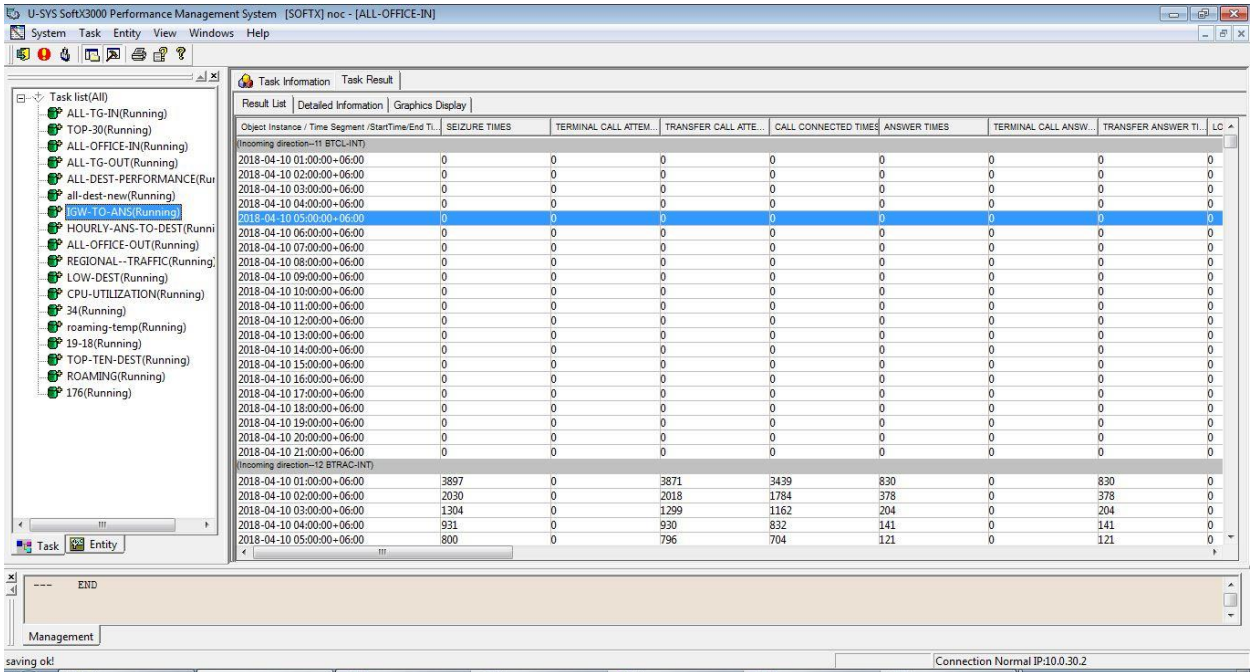
Fig 10.9: Daily Domestic Traffic incoming

-outgoing

Fig 10.10: Daily Domestic Traffic out going

Fig 10.11: Daily Domestic Traffic out going

domestic traffic data is analyzed here in a nutshell.

Hourly ANS to Destination:

ANS to Destination (IGW) call performance is analyzed here.

Regional Traffic:

Region wise Domestic traffic (Dhaka, Chittagong, Khulna) Performance is analyzed here.

10.2.3 Trunk Performance Analysis:

Call is stored and forward via a memory unit. It is known as "Trunk". We analysis the trunk performance analysis in the Peak hour (06 pm to 11 pm) in every 30 minutes.
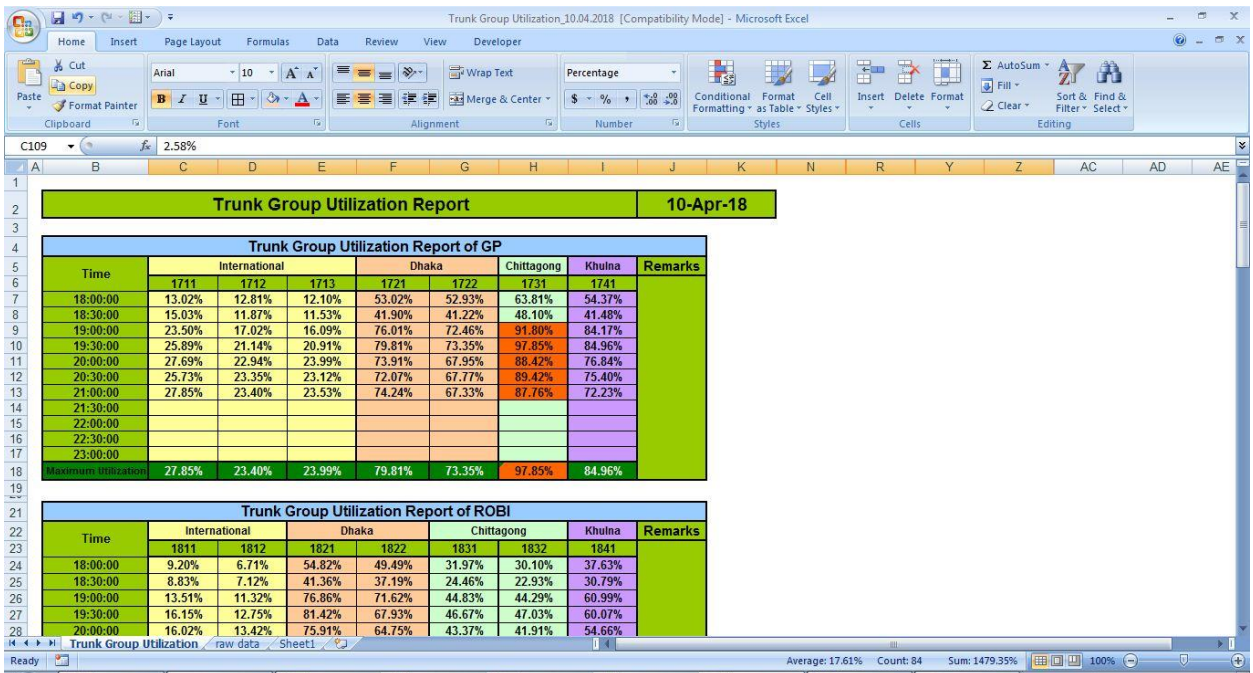

Fig 10.12: Trunk Performance Analysis.

Chapter 11

Conclusion

Entry level position or Internship is a chance to get the pragmatic learning over instructive information. "Voicetel" is a presumed ICX based organization and a sister worry of "Partex Group". It was my benefits that they had enabled me to finish my temporary position in such a rumored organization. As an understudy I have worked in their center piece of NOC division. For a large portion of the designing understudy it is imperative to take a shot at a professional workplace. I have adapted such huge numbers of things, similar to how to deal with the function weight regardless of a modern situation. In this report I have clarified my work encounters. I have figured out how they deal with their function routine and how they check the association. At the point when association gets flopped then they have shown me how to deal with the circumstance and changed the association with other dynamic system.

Here I motivated the chance to get the functional learning over **Huawei core Management system**, **universal Media gateway Local maintenance Terminal, SoftTX-3000**. I have also learnt about various **MML command** to **ADD/Remove** any **Mobile Operator IGW** to the call flow diagram, **increase/decrease** the **capacity** of any **operator/IGW**. At long last, I have took in the conventions which are required for **telecom industry**.

At last I want to say that work with core network and besides in NOC is very compulsive. I have got the opportunity to gain practical experiences using my theoretical knowledge. I have learned so many informative things from there to apply in future in professional field.

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