

Dedication

Peace and prayers to our prophet Mohamed (PBUH).

I dedicate this thesis to my parents with their patience, understanding, support and most of all love, the completion of this work would not have been possible and also I dedicate this thesis to my friends for their support and cooperation.

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Contents

Title	P. No
Dedication	I
Acknowledge	II
Contents	III
List for Figures	V
Lists of Tables	VII
Abbreviations	VIII
Abstract (in Arabic)	XI
Abstract (in English)	XII

Chapter one Introduction

1-1-Background	1
1-1-1-Circuit Switching	1
1-1-2-Message Switching	1
1-1-3-Packet Switching	2
1-1-4-Mobile Network switching systems	3
1-1-5-General packet radio service (GPRS)	4
1-1-6-Universal Mobile Telecommunications System (UMTS)	4
1-2-Problem Statement	4
1-3-Research objectives	4
1-4-Reasearch Methodology	5

1-5-Expected Result	5
1-6-Research Outlines	5

Chapter Two: Literature Review

2-1-Defination of switching techniques	6
2-2- Types of Switching	6
2-2-1-Circuit Switching	6
2-2-2-Packet Switching	10
2-3-Network switching Systems on GSM	17
2-4- General Packet Radio Service	20
2-4-1-Benefits of GPRS	20
2-4-2-GPRS Applications	21
2-4-3-GPRS Architecture	26
2-4-4-GPRS Terminals	30
2-4-5-GPRS Device Types	31
2-4-6-Mobility Management	34
2-4-7-GPRS Interfaces	36
2-4-8-GPRS Processes	41
2-4-9-GPRS Authentication Process	43
2-5-Universal Mobile Telecommunication System	49
2-5-1-UMTS Services	50
2-5-2-UMTS Interfaces	52

Chapter three: Simulation for Call Scenarios on GSM network

3-1-The Scenario for call on the same BTS	59
3-2-The Scenario for call on the same BSC	60
3-3-The Scenario for call on the different BSCs	61
3-4-The Scenario for call on the different PLMNs	63
3-5-The Scenario for call on the same PLMNs but to roamer	65

Chapter Four: Result and Discussion for Call Scenarios

4-1- <u>Service Model</u>	67
4-2- <u>Signaling Flow</u>	67
4-3- <u>Description of the Signaling Flow</u>	69
4-4- <u>Description of Associated Measurement Entities</u>	72

Chapter Five: Conclusion and Recommendations

5-1-Conclusion	76
5-2 Recommendations	78
References	80
Appendix	81

List for Figures

Fig2-1-Circuit Switching.

Fig 2-2-Packet Switching.

Fig 2-3-GSM Elements.

Fig 2-4 GPRS Reference Architecture.

Fig 2-5 -Routing of Data Packets between a Fixed Host and a GPRS MS.

Fig 2-6 GPRS States in a Mobile Station.

Fig 2-7 GPRS Interfaces.

Fig 2-8 GPRS Network Protocol Stack.

Fig 2-9-GTP Packet Structure.

Figure 2-10-GPRS Attach Request Procedure.

Figure 2-11 GPRS Attach Request Procedure (continued).

Figure 2-12 PDP Context Activation Procedure.

Figure 2-13 describes the detach process initiated by the MS. The numbers in the figure correspond to the numbered steps above.

Figure 2-14 shows a PDP request initiated from the network side when the client has been assigned a static IP address. The numbers in the figure correspond to the numbered steps above.

Figure 2-15 describes a PDP request initiated from the network side when the client has been assigned a dynamic

IP address. The numbers in the figure correspond to the numbered steps above.

Figure 2-16 UMTS Architecture.

Figure 2-17-UTRAN signaling.

Fig-3-1-The Scenario for call on the same BTS.

Fig 3-2- The Scenario for call on the same BSC.

Fig 3-3-The Scenario for call on the different BSCs.

Fig 3-4-The Scenario for call on the different PLMNs.

Fig 3-5-The Scenario for call on the same PLMNs but to roamer.

Figure-5-1 Intra-MSC calls flow.

Lists of Tables

Table2-1 GPRS Network Elements.

Table 4-1 Measurement points on the Originating side.

Table 4-2 Measurement points on the terminating side.

Abbreviations

2G	=	Second generation.
3G	=	Third generation.
ANSI	=	American National Standard Institute.
APN	=	Access point name
ATM	=	Asynchronous Transfer Mode (ATM),
AUC	=	Authentication Centre
BG	=	Border Gateway
BSC	=	Base Switching Controller.
BSS	=	Base Station Subsystem
BTS	=	Base Transceiver Station.
CCS7	=	Signaling System Number 7
CDMA	=	Code Division Multiplexing Access
CDPD	=	Cellular digital packet data
CDR	=	Call Data Record
CG	=	Charging Gateway
CHAP	=	Challenge Handshake Authentication Protocol
CS	=	Circuit Switching
CSD	=	Circuit-Switched Data
DHCP	=	Dynamic Host Configuration Protocol
DMT	=	DMT Discrete multitone
DNIS	=	Dialed number identification service
DNS	=	Domain Name System
DSL	=	Digital Subscriber Line
EIR	=	Equipment Identity Register.
ETSI	=	European Telecommunications Standard Institute
FDD	=	Frequency division duplex
FDM	=	Frequency division Multiduplex
FDM	=	Frequency division Multiduplex Access
FM	=	Frequency Modulation
GGSN	=	Gateway GPRS Support Node

GMSC = Gateway Mobile Switching Center.
 GPRS = General Packet Radio System
 GSM = Global System for Mobile
 GSN = GPRS support node
 GTP = Tunneling Protocol
 HLR = Home local Register.
 HSCSD= High-Speed Circuit-Switched Data
 ID = Identity Definition
 IMEI = International Mobile Station Equipment Identity
 IMSI = International Mobile Subscriber Identity
 IN = Intelligent Network.
 IPSS = International Packet Switched Service.
 IP = Internet Protocol
 IPV4 = Internet Protocol Version 4
 ISDN = Integrated Services Digital Network
 LAN = Local Area Network.
 MAC = Media Access Control.
 ME = Mobile Equipment.
 MPLS = Multiprotocol Label Switching (MPLS)
 MS = Mobile Station
 MSC = Mobile Switching Center.
 MSC/VLR = Mobile Switching Center and Visitor Local Register.
 MSISDN = Mobile station ISDN
 MT = Mobile Terminal
 NAS = Network Access Server
 NSS = Network switching Subsystems
 OSI = Open Systems Interconnection
 OSS = Operations Support System
 PAP = Password Authentication Protocol
 PC = Personal Computer
 PDA = Personal Digital Assistant
 PDH = Plesiochronous Digital hierarchy
 PDP = Packet data protocol
 PDU = Protocol Data Unit
 PLMN = Public land mobile network
 POTS = Plain Old Telephone Service
 PPP = Point-to-Point Protocol
 PS = Packet Switching

PSTN	=	Public Switched Telecommunications Network
QoS	=	Quality of Service
RAC	=	Radio access Controller
RAN	=	Radio access Network
RNS	=	Radio Network Subsystem
RSVP	=	Resource reservation protocol.
SDH	=	Synchronous Digital Hierarchy
SGSN	=	Serving GPRS support node
SIM	=	Subscriber Identity Module
SLAs	=	Service-level agreements
SMSC	=	Short Message Serve Centre
SONET	=	Synchronous optical networking
TCP	=	Transmission Control Protocol
TDD	=	Time division duplex
TDM	=	Time division Multiduplex
TDMA	=	Time division Multiduplex Access
TDP	=	Time-Driven priority
TE	=	Terminal Equipment
TLLI	=	Temporary Logical Link Identity
TMSI	=	Temporary Mobile Subscriber Identity
UDP	=	User Datagram Protocol
UE	=	User Equipment
UMTS	=	Universal Mobile Telecommunication System
USIM	=	UMTS subscriber identity module
UTRAN	=	Universal Terrestrial Radio Access Network
VMS	=	Voice Mail Server
VoIP	=	VoIP voice over IP
VPDN	=	Virtual private data networks
WAN	=	Wide Area NeTWORK
WAV	=	Waveform Audio File Format
WCDMA	=	Wide Code Division Multiplexing Access
X25	=	Cross Semi Permanent Connector

الملخص

الغرض من هذه الرسالة هو التحقيق في دائرة تقنيات التحويل، وتقنيات حزمة التحويل، GSM، GPRS وUMTS. تشمل هذه الرسالة مقدمه تفصيليه عن هذه التقنيات وشرحاً بالتفاصيل حول أنواع التبديل على الشبكات الحديثة والمستقبلية. وقمنا بعد ذلك بدراسه المحاكاة سيناريوهات مكالمه باستخدام أكثر من شبكة واحدة. وفى هذا المجال اخذنا اكثر من خمس عينات لسيناريوهات وشرح الرسائل بين العناصر بالتفاصيل. ويشمل الفصل الاخير من الرسالة من خاتمه والتوصيات لتحويل الدوائر وتحويل الحزمة.

Abstract

The purpose of this thesis is to investigate circuit switching techniques, packet switching techniques, GSM, GPRS and UMTS. The thesis includes the introduction to these techniques and the types of switching son recent and future networks. This is followed by making simulations for call scenarios using more than one network. In this respect five samples for scenarios have been taken, leading to full explanation of the messages between the elements .The final chapter embodies conclusion and recommendations for circuit switching and packet switching.

