

الآية

يقول الله تعالى في كتابه الكريم:

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

(أَمْهُمْ قَوْمٌ لَا يَلْمِزُكَ أَفْعَالُ الْآخِرَةِ وَيَرْجُونَ عَذَابَ اللَّهِ
لَا يَسْتَوِي الَّذِينَ يَعْلَمُونَ وَالَّذِينَ لَا يَعْلَمُونَ * نُمَايَةً تَذَكَّرُ أُولَ الْأَنْبِيَاءِ)

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

سورة الزمر

الآية (٩)

Dedication

Dedicated to our mothers and fathers ...

With warmth and faith

Dedicated to our brothers ...

With love and respect

Dedicated to our friends...

Whom we cherish their friendship

Dedicated to our special people ...

Who mean so much to us

Dedicated to all our teacher ...

In whom we believe so much

Mutaz

Acknowledgement

By the grace of Allah and his help I completed this study, all praise to him.

Then the encouragement for by family and friends for the support

My gratitude goes

To Dr: Khalid Hamid Bilal

**MY supervisor who helped me with a great appraised and guides
me to complete this work.**

Abstract

Dimensioning a new network determines the minimum capacity requirements that will still allow the Teletraffic Grade of Service (GoS) requirements to be met.

Dimensioning involves planning for peak-hour traffic, that hour during the day during which traffic intensity is at its peak also it involves determining the network's topology, routing plan, traffic matrix, and GoS requirements.

In network design and planning the most important is the combination of low cost and flexibility. By installing few wireless base stations providing coverage to the surrounding area with multifunctional application: high-speed Internet, telephone service, voice and data transfer, and video applications.

In this thesis a comparison of WIMAX and Microwave will be done through a simulation program to calculate the tower height and other equipment costs to build the network and compare between the two networks in their requirements and cost.

المستخلص

إن وضع الأبعاد لأي شبكة جديدة تُحدد بمتطلبات القدرة الدنيا التي تسمح للإتصال بما يعرف ب (درجة الخدمة) الواجب توافرها. وتشمل هذه الأبعاد التخطيط لحركة الإتصال في ساعة الذروة التي هي ساعه خلال اليوم تصل فيها كثافة حركة الإتصالات إلى ذروتها كما أنها أيضاً تُحدد طوبولوجيات الشبكة، خطة التوجيه، مصفوفة حركة الإتصالات ، ومتطلبات درجة الخدمة. عند القيام بتصميم الشبكات والتخطيط لها من أهم الاشياء التي يجب أن تُوضع في الحسبان هي التأكد من إنخفاض التكلفة والمرونة في ان واحد وذلك عن طريق تركيب عدد محدود من المحطات اللاسلكية التي بدورها تغطي المنطقة المحيطة بها موفرة تطبيقات متعددة الوظائف مثال على هذه الوظائف : الإنترنت عالي السرعة، وخدمات الهاتف والصوت ونقل البيانات، وتطبيقات الفيديو.

في هذا المشروع ستنتم مقارنة كل من الواي ماكس والميكروويف من خلال برنامج محاكاة يحسب إرتفاع البرج وتكاليف المعدات الأخرى لبناء شبكة إتصال لكل على جِدّة والمقارنة بين الشبكتين في متطلباتهم فضلاً عن التكلفة.

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Abbreviations

AC	Authentication Centre
AES	Advanced Encryption Standard
AMPS	Advanced Mobile Phone System
ATDE	Adaptive Time Domain Equalization
BSC	Base Station Controllers
BSS	Base Station Subsystem
BTS	Base Transceiver Station
CDMA	Code Division Multiple Access
DES	Data Encryption Standard
DNS	Domain Name Servers
EAP	Extensible Authentication Protocol
EDGE	Enhanced Data-Rates for GSM Evolution
EIR	Equipment Identity Register
ES	Expanded Spectrum
EV-DO	Evolution- Data Optimized
FCC	Federal Communications Commission
FDMA	Frequency Division Multiple Access
FM	Frequency Modulation
GPRS	General Packet Radio Service
GSM	Global System for Mobile Communications
HF	High-Frequency
HLR	Home Location Register
ITU	International Telecommunication Union
JDC	Japanese Digital Cellular
LOS	Line Of Sight
MAC	Media Access Control
MSC	Mobile Switching Centre
NLOS	Non-Line of Sight
NMT	Nordic Mobile Telephones
NSS	Network Switching Subsystem
NTT	Nippon Telephone and Telegraph
PDC	Personal Digital Cellular system

RNC	Radio Network Controller
SHF	Super High Frequency
SIR	Signal-to-Interference Ratio
SMSC	Short Message Service Centre
TACS	Total Access Communication Systems
TDMA	Time Division Multiple Access
UMTS-HSPA	Universal Mobile Telecommunications System- High Speed Packet Access
VLR	Visitor Location Register
VMS	Voice Mail Service
WEP	Equivalent Privacy
WIMAX	Worldwide Interoperability for Microwave Access