Abstract

Worldwide Interoperability for Microwave Access (WiMAX) is a broadband wireless technology based on IEEE 802.16-2004 and IEEE 802.16e-2005. This type of networks supports multiservice traffic (voice, video and Ftp) and guarantees the Quality of Service(QoS). This thesis evaluate the performance analysis of two routing protocols (AODV and OLSR) in WiMAX technology using voice as traffic. The background of WiMAX and routing protocol are introduced and analyzed. The performance of routing protocols is measured and compared according to the following criteria: delay, jitter, and throughput. Results for different scenarios–varied according to the number of users- are simulated using OPNET network simulator.

المستخلص

وايماكس هي تقنية لاسلكية ذات النطاق العريضتستند على المعيار IEEE 802.16-2004والمعيار IEEE 802.16e-2005 . هذا النوع من الشبكات يدعم عدد من الخدمات (الصوت والفيديو وFTP) ويضمن جودة الخدمة (QoS). هذه الأطروحة دراسة تحليله لأداء اثنين من بروتوكولات التوجيه (OLSR&AODV) في تكنولوجيا واي ماكس باستخدام نظام تطبيق الصوت. وقدمت خلفية عن الوايماكس وبرتوكولات التوجيه وتحليلها. تم قياس الأداء لبروتوكولات التوجيه AODV و OLSR وفقا للمعايير الآتية (delay, jitter, and throughput). ويشمل التحليل اختبار أداء البروتوكول في عدد مختلف من المستخدمين.وقد تم ذلك باستخدام برنامج محاكي الشبكات OPNET لتقييم أداء بروتوكولات التوجيه .

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Abbreviation

Abbreviation	Name
WiMAX	Worldwide Interoperability for Microwave Access
OFDM	Orthogonal Frequency Division Multiplexing
MAN	metropolitan area network
IEEE	Institute of Electrical and Electronics Engineers
BWA	Broadband Wireless Access
AES	Advanced Encryption Standard
EAP	Extensible Authentication Protocol
TDD	time division duplexing
FDD	frequency division duplexing
ARQ	automatic retransmission requests
AMC	Adaptive modulation and coding
NLOS	non-line-of-sight
MIB	Management Information Base
DL	Down-link
UL	Up-link
SDU	service data units
MPDU	MAC protocol data units
DOCSIS	Data over Cable Service Interface Specification
BS	Base Station
UGS	Unsolicited grant services
RTPS	Real time polling service
NRTPS	Non real time polling service
BE	Best effort
ERTPS	Extended real-time polling rate service
SFID	service flow identifier

QoS	Quality of services
MS	Mobile station
NLoS	Non-Line-of-Sight
LOS	Line-of-Sight service
PMP	point-to multipoint
RSs	relay stations
AODV	Ad hoc On-demand Distance Vector
DSN	Destination Sequence Numbers
RREQs	Route Request
RREPs	Route Replies
RERRs	Route Errors
UDP	user datagram protocol
TTL	Time-To-Live
DSR	Dynamic Source Routing
OLSR	Optimized Link State Routing
MPR	Multipoint relay
BS	Base station