

Acknowledgement

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المستخلص

في الشبكات اللاسلكية يشكل ضمان جودة الخدمة للمستخدمين تحديا كبيرا ويرجع ذلك إلى عاملان أساسيان هما أن الأجهزة تكون في حالة حركة مستمرة وإلى محدودية الموارد. يعتبر البروتوكول AODV من أهم البروتوكولات المستخدمة في الشبكات اللاسلكية ومن أهم تطبيقات الشبكات اللاسلكية هو تطبيق الفصول الافتراضية أو التعليم عن بعد.

الهدف من هذه الدراسة هو تقييم وتحسين أداء بروتوكول ال AODV في بيئة الفصول الافتراضية ليتمكن أكبر عدد من المستخدمين من الوصول الى الجهاز الرئيسي في نفس الوقت وذلك يتم عن طريق إيجاد قيم مثلى لمعايير الأداء مثل معدل البيانات وحجم **الحزمة** و**طول الطابور**.

قيم مختلفة من معدل البيانات وحجم **الحزمة** و**طول الطابور** تم اختبارها باستخدام برنامج المحاكاة إن إس 2. وقد تم تحليل نتائج المحاكاة في شكل ملف التتبع مع الرسوم البيانية المقابلة لها لاستكشاف القيم المثلى من مقاييس الأداء. بناء على السيناريوهات المختلفة للفصول الافتراضية والتي تمت عملية محاكاتها باستخدام برنامج المحاكاة إن إس 2 يستطيع عدد محدد من المستخدمين الوصول الى الجهاز الرئيسي في نفس الوقت عند تطبيق معايير الأداء المقترحة في هذه الدراسة.

Abstract

In mobile ad hoc networks (MANETs), the provision of quality of service (QoS) guarantees is much more challenging , mainly due to node mobility and resource constraints. Most popular routing protocol in MANET is AODV. The goal of this thesis is to evaluate and optimize the performance of AODV routing protocol in the virtual classroom environment by determining an optimal value of performance metrics such as data rate, queue size and packet size. Groups of different values of performance metrics are tested using ns-2 simulation to increase the number of nodes reaching the main node concurrently.

Different values of data rate, packet size and queue size have been considered to perform the simulation. Accordingly, the simulation results were analyzed in the form of trace file with their corresponding graphs to explore the optimum values of performance metrics. According to the different scenario in the virtual classroom, computers can access the main node concurrently with acceptable QoS when applying the adaptively proposed performance metrics and restriction. Furthermore, this result considers great enhancement when the new QoS metrics are applied.

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List of Abbreviations

MANET	Mobile Ad hoc Network
Ad-hoc	Advanced Developers Hands on Conference
AODV	Adhoc on demand distance routing protocol
DSR	Dynamic source routing protocol
OLSR	Optimized Link State routing protocol
ZRP	Zone Routing Protocol
QoS	Quality of Service
CBR	Continuous bit rate
IEEE	The Institute of Electrical b and Electronics Engineers
NDMP-AODV	A Node-Disjoint Multipath Routing Method based On AO DV protocol
TORA	Temporally ordered routing algorithm
SR-AODV	A Stability Routing Protocols base on Reverse AODV
R- AODV	A reverse AODV routing protocols.
EM-AODV	Metric based enhancement to AODV

routing protocol

CBRP

Cluster Based Routing Protocol

ABR

Associativity-Based Routing

SSR

Signal Stability Routing

LAR

Location Aided Routing

GSR

Global State Routing

CGSR

Cluster-head Gateway Switch Routing

QOSPF

**Quality of Service Open shortest Path
First**