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Abstract

Mobile IP allows a mobile node to maintain a continuous connectivity to the Internet when moving from one access point AP to another. However, due to the link switching delay and to the Mobile IP handover operations, packets designated to mobile nodes can be delayed or lost during the handover period. This project presents a new mechanism called the global mobile internet protocol version 6 (GMIPv6) in order to improve the handover performance and reducing the delay in the context of Mobile IPv6 over wireless networks. The GMIPv6 mechanism allows the mobile node (MN) to move from one AP to another without changing its current address (GMIPv6) and focusing on searching for a free channel on the AR/AP to path through. The MN can thus use this global address without engaging in the process of Address Auto-configuration or the procedure of Duplicate Address Detection (DAD). The GMIPv6 is implemented and simulated in OPNET simulation, the result provide low latency, less packet loss compared to the standard function of the mobile IPv6.

المستخلص

يسمح بروتوكول العنوانه للهواتف النقاله باستمرارية الإتصال بشبكة الإنترنت عند الإنتقال من نقطة وصول الى أخرى. ومع ذلك ,بسبب التأخير في تبديل القنوات و عملية تسليم بيانات الهاتف المحمول , الحزم الخاصة بالهاتف قد تتعرض للتأخر أو الضياع خلال فترة تسليم البيانات. هذا المشروع يقدم تقنية جديده تسمى بروتوكول العنوانه العالميه النسخه السادسه لتحسين أدائية عملية تسليم البيانات و تقليل التأخر في محتوى الهاتف التابع لبروتوكول العنوانه النسخه السادسه خلال الشبكة اللاسلكية. تقنية بروتوكول العنوانه العالميه النسخه السادسه تسمح للهاتف النقال بالإنتقال من نقطة وصول إلى أخرى بدون الحوجه لتغيير عنوانه الحالي و التركيز فقط علي البحث عن قناة فارغه في جهاز التوجيه أو نقطة الوصول للمرور عبرها. الهاتف النقال يستطيع إستخدام هذه العناوين العالميه دون الحاجة للإرتباط بعملية التهيئة الذاتية للعنوان أو عملية إكتشاف العنوان المكرر. نفذت تقنية بروتوكول العنوانه العالميه النسخه السادسه وتم تصويرها في برنامج الأوب نت, قدمت النتائج تأخر منخفض,وقللت من فقدان الحزم مقارنة مع الدالة الأساسية لبروتوكول العنوانه النسخه السادسه للهاتف النقال .

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Abbreviations

IEEE	Institute of Electrical and Electronics Engineers
Wi-Fi	Wireless Internet for Frequent Interface
AP	Access Point
OSI	Open System Interconnection
IP	Internet Protocol
MIP	Mobile Internet protocol
IETF	Internet Engineering Task Force
VoIP	Voice over Internet protocol
QOS	Quality Of Service
MN	Mobile Node
AR	Access Router
HA	Home Agent
CN	Correspondent Node
GMIPv6	Global Mobile Internet Protocol Version 6
LTE	Long Term Evaluation
UE	Ultimate Ears
NGC	Neighbor Graph Cache
L-HCF	Lightweight Handover Control Function
DAD	Duplicate Address Detection
G	Generation
RAT	Radio Access Technology
OFDMA	Orthogonal Frequency Division Multiple Access
MC-CDMA	Multi Carrier Code Division Multiple Access
LAS- CDMA	Large Area Synchronized Code Division Multiple Access
UWB	Ultra wideband
LMDS	Local Multipoint Distribution system
WWW	Worldwide Wireless Web
OTP	Open Transport Protocol

NAT	Network Address Translation
FLC	Flow Labeling Capability
IPsec	Internet protocol security
ULA	Unique local Address
NUD	Neighbor Unreachability Detection
ND	Neighbor Discovery
VPN	Virtual Private Networks
ICMP	Internet Control Message Protocol
ISP	Internet Service Provider
HoA	Home Address
HN	Home Network
CoA	Care-of-Address
FAR	Foreign Access Router
FN	Foreign Network
MD	Movement Detection
CARS	Candidate Access Router Selection
AC	Address Configuration
A&A	Authentication & Authorization
BU	Binding Update
RD	Router Discovery
RS	Router Solicitation
RA	Router Advertisement
RFC	Request For Comments
NS	Neighbor Solicitation
CARD	Candidate Access Router Discovery
TARS	Target Access Router Selection
DHCP	Dynamic Host Configuration Protocol
WISPs	Wireless Internet Service Providers
BACK	Binding Acknowledgement
WLAN	Wireless Local Area Network