Enhanced MIPv6 (EMIPv6) :Mobile IPv6 Extension for Existent Internet

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ABSTRACT

Mobile IP is developed by IETF for increasing needs of user mobility.Mobile IP defines a global mobility solution that provides host mobility management on the Internet.In Internet environments,when an MN(Mobile Node) moves from its HN(Home Network) and attaches itself to FN (Foreign Network),it obtains a new IP address to retaim its network connectivity.Moreover,Mobile IPv6 has been introduced by IETF,in order to adapt the next generation internet protovol IPv6.Most internet backbone today is still supporting IPv4 only.However,Mobile IP and Mobile IPv6 are designed for IPv4 only and IPv6 only respectively.We propose a novel mechanism to integrate Mobile IPv6 and existent internet.This mechanism also introduces the IPv6-destination options extension header for route optimization.We compared our mechanism with EMIPv4[10] to investigate the loading on HNGW (Home Network Gateway) and the end-to-end delay between MN and CN.According the discussion,we claim that our method yields significant improvement, and does not introduce much burden to network equipments.

Keywords : Mobile IP ; Transition Mechanism ; Tunneling ; Mobile Management

Table of Contents

REFERENCES

參考文獻 [1] J.Postel,"Internet Protocol",IETF RFC 791,Sep1981.

[2] S.Deering, and R.Hinden,"Internet Protocol,Version 6 (IPv6)" Specification",IETF RFC 2460,Dec.1998.

[3] R.Gilligan,and E.Nordmark,"Transition Mechanisms for IPv6 Hosts and Routers",IETF 2893,Aug 2000.

[4] K.Tsuchiya,H.Higuchi,and Y.Atarashi,"Dual Stack Hosts using the"Bump-In-the-Stack"Technique(BIS)",IETF RFC 2767,Feb 2000.

[5] W.Simpson,and Daydreamer, "IP in IP Tunneling",IETF 1853, Oct. 1995.

[6] G. Tsirtsis, anf P. Srisuresh,"Network Address Translation- Protocol Translation (NAT-PT)",IETF RFC 2002,Oct.1996.

[7] G.Perkins,"IP Mobility Support",IETF RFC 2002,Oct 1996.

[8] D.Johnson ,C.Perkins,and J.Arkko,"Mobility Support in IPv6", IETE RFC 3775,June.2004.

[9] R.Droms,"Dynamic Host Configuration Protocol",IETF RFC 1531,Oct.1993.

[10] S.Thakolsri,C Prehofer,and W.Kellerer,"Transition mechanism in IP-based wireless networks",Applications and the Internet Workshops,2004.ASINT 2004 Workshops.2004 International Symposium on pp.112-119,Jan . 2004.

[11] C. Partridge,"Mail routing and the domain system",IETF RFC 0974,Jan.1986.

[12] S.Deering,"ICMP Router Discovery Messages",IETF RFC 1256, Sep.1991 [13] G.Montenegro,"Reverse Tunneling for Mobile IP,revised",IETF RFC 3024,Jan. 2001.

[14]R.Rivest,"The MDS Message-Digest Algorithe",IETF RFC 1321.Apr.1992.

[15]S. Thomson, and T.Narten,"IPv6 Staeless Address Autoconfiguration",IETF RFC 2462,Dec.

[16] Mobile IP 技術發展 http://www.cc1.itri.org.tw/about/cc1_enews/CCL_e9106133K.htm [17] S.Kent,and R,Atkinson,"Security Archiecture for the Internet Portocol",IETF RFC 2401,Nov.1998.

[18] R.Hinden,and S.Deering,"Interent Protocol Version6(IPv6) Addressing Architecture",IETF RFC 3513.Apr.2003.
[19] E.Rosen,A.Viswanathan,and R.CallonQos,"Multiprotocol Label Switching Architecture",IETF RFC 3031,Jan.2001.
[20] Qos http://en.wikipedia.org/wiki/Quality_of_service [21]T.Narten,E.Nordmark,and W.Simpson,"Neighbor Discovery for IP Version6 (IPv6)",IETF RFC 2461,Dec.1998.
[22] EUI-64 http://standards.ieee.org/regauth/oui/turorials/EUI64.html [23]Y.Rekhter,and T.Li,"An Architecture for IPv6 Unicast Address Allocation",IETF RFC 1997.Dec.1995.
[24]S.E.Deering,"Host extensions for IP multicasting",IETF RFC 1112,Aug.1989.
[25]Implementing IPv6 Addressing and Basic Connectivity http://www.cisco.com/unovercd/cc/td/doc/product/software/ios123 /123cgcr/ipv6_c/v6addres.htm [26] K.Egevang,and P.Francis,"The IP Network Address Tranclator (NAT)",IETF RFC 1361,May 1994.
[27]Papers-USENIX Annual Technical Conference (NO98).1998 http://www.usenix.org/publications/library/proceedings/usenix98/ full_papers/fiuczynski/fiuczynski_html/fiuczynski.html [28]J.De Clercq G.Gastaud,D.Ooms,S.Prevost and F.Le Faucheur,"Connecting IPv6 Islands across IPv4 Clouds with BGP",IETF Internet Draft,Oct.2002.
[29]Nsnam http://nsnam.isi.edu/nsnam/index.php/Main_Page [30]MobiWan:NS-2 extensions to study mobility in Wide-Area IPv6 Networks http://www.inrialpes.fr/planete/mobiwan/