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Problem Statement and Requirement: Inter Mobile Access Router Protocol draft-deng-giap-ps-00

Status of this Memo

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Abstract

This document discusses the problem and requirement of the communication between mobile access router. With the evolution of mobile communication, mobile wirless access point will not only using IP for transporation, but also has much more function to support mobile communication such as self organization/optimization network, flat network archtiecture, multiple connections and distributed network architecture et al .

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1. Introduction

while more and more mobile operators are thinking that IP function will not only be used for transporation by mobile access network, it could also undertake more tasks such as self organization/ optimization network, multiple connections, IP mobility management, and distributed IP access network.

There are several distributed wireless IP access network scenarios may implement inter mobile access router protocol such as self organization network, mesh, and structured P2P based mobile IP access network.

In the current mobile operator's network, they have to spend huge resource for test drive during mobile network deployment and optimization, which consist of major part of CAPEX and OPEX. With the potential requirement of multiple connections of wireless communications and distributed IP access network, IP communications between mobile access routers could help to reduce the CAPEX and OPEX, for example this communication could realize an alternative way of conventional drive test and configuration which need a huge man power performaning and only get a snapshop result.

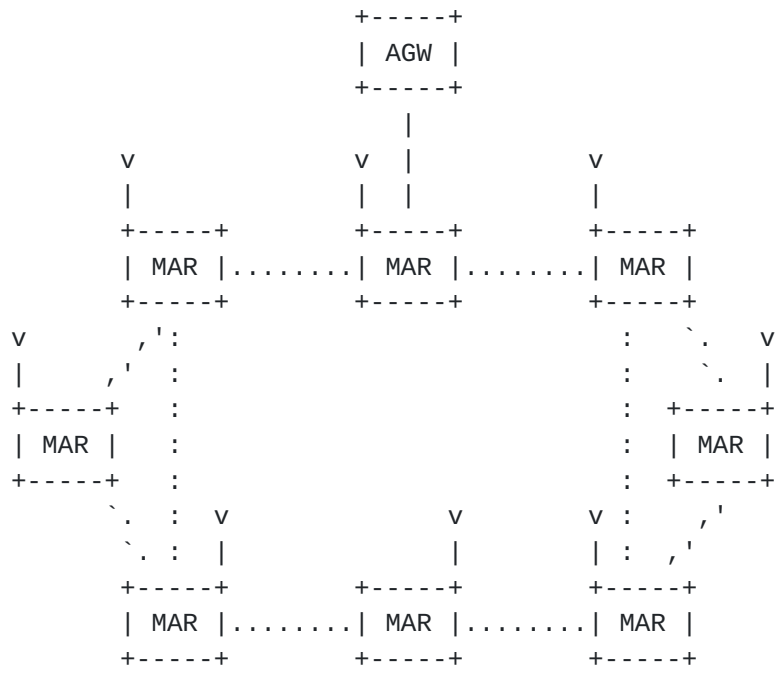
2. Scenarios of implementing inter mobile access router protocols

There are two scenarios implementing inter mobile access router protocols, one is distributed mobile IP access network, the other is half distributed mobile IP access network for the sake of self organization and configuration. .

2.1. Distributed Mobile IP Access Network

Recent development of distributed network has bring several benefit to industry such as less investment and simple network infrastructure.

The distributed IP Mobile Access Network is shown in the figure below:

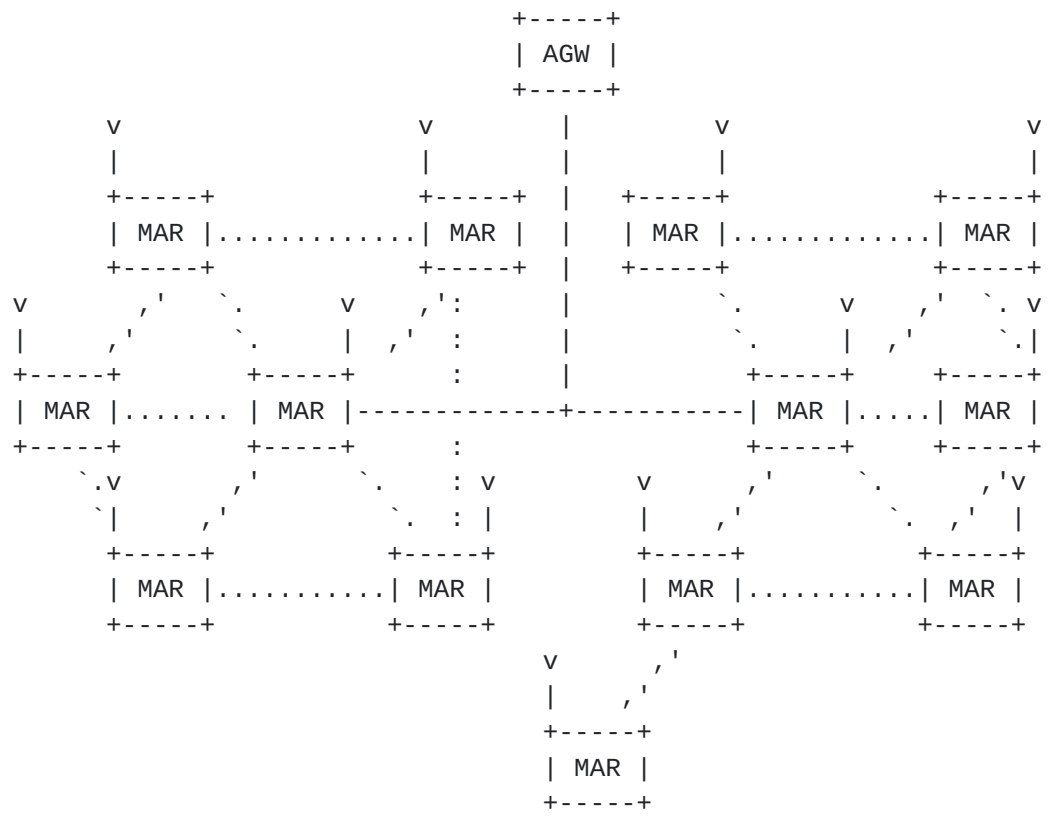


The scenario of the above could be wireless mesh network and structured P2P wireless network architecture. After bringing into P2P function into each mobile access router and each mobile access router has multiple wireless radios. One is specifically for mobile terminal access, others could be used for communication with other mobile access router. Under such direction, several purpose of inter access router protocol could be realized in the Internet level, we are going to illustrate it in the next section.

2.2. Half Distributed Mobile IP Access Network

Centralized distributed network still cover major deployment in the current network, based on this network architecture, self organization/optimization become possible after development of inter mobile access router protocol.

The half distributed IP mobile access network is shown in the figure below:



This scenario has two distributed mobile access network domain, the core mobile access router is connected with each other and could be connected to access gateway, and several mobile access router could work as relay mobile router. Based on this scenario, zero network configuration could be done based on inter access router IP protocol. As well self organization/optimization network would prefer to be implemented based on this.

3. Implementations of the Protocol

Current organization and optimization is based on low-level interface and per-device basis, it lacks scalability and testability in real time operational mobile network.

3.1. Plug in Play Configuration

Mobile network require zero configuration of new mobile IP access router where Plug and Play could realize based on Internet protocol. Which could save huge of human resource for test drive and manual opeartions.

3.2. Self Organization/Optimization Network

The time and cost of deploying, configuring and operating networks, is expected to increase even further due to the exponential growth in numbers of network elements in the Internet,especially mobile networks such as mobile access router. The increasing complication and dynamic nature of many mobile networks make configuration more complex and further mandate continuous adaptation and validation of active configurations in real-time.

To Achieve the characterstical like real time, adaptive, flexibity, we need not only engineering principles for automated configuration, but also standardized inter mobile IP access router protocol. The ultimate goals are to support future large-scale mobile networks that will self-organize/optimize, dynamically adapt to external events and allow for low-cost operation.

4. IANA Considerations

This document makes no requests to IANA.

5. Security Considerations

Mobile inter access router protocol do require IPsec based protection mechanism, IKE could be used for neogiation IPsec tunnel between mobile access routers.

6. Conclusion

This draft discusses problem and requirement for inter mobile access router protocol which could support self organziation and optimization of mobile IP access network.

7. Informative References

[RFC4067] Loughney, J., Nakhjiri, M., Perkins, C., and R. Koodli, "Context Transfer Protocol (CXTP)", RFC 4067, July 2005.

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