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Problem Statement for Flow Control of MIF Hosts
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Abstract

MIF hosts normally have multiple provisioning domains or interfaces. In some cases, the applications running on the MIF hosts need to select provisioning domain or interface based on either user preferences or network polices. There is currently no standard ways for the MIF hosts to implement this kind of provisioning domain/ interface selection. This document discusses the problem statement of provisioning domain/interface control of the MIF hosts.

Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of BCP 78 and BCP 79.

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This Internet-Draft will expire on January 09, 2014.

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1. Introduction

The applications running on the MIF hosts normally do not have the knowledge of the multiple provisioning domain or multiple interfaces information. But sometimes, the network connection of the applications running on the MIF hosts need to be controlled to switch from one network to another based on either operator polices or user preference. For example, ANDSF (Access Network Discovery and Selection Function) that defined by 3GPP [TS.24.312] can push network selection policies to the terminal. However, there is no standard and well defined interfaces for this kind of policy based flow control enforcement. This will lead to the complexity and difficulties of the policy enforcement implementation. This document discusses the problem statement of flow control of MIF host.

2. Conventions and Terminologies

2.1. Conventions used in this document

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL","SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC2119].

2.2. Terminology

ANDSF：Access Network Discovery and Selection Function. This network entity is defined by 3GPP [TS.24.312].

The terminology of this document comply to [RFC6418].

3. Scenario and problem statement of flow control of the MIF hosts

This section discusses the scenario of the flow control of MIF host. Then analysis the problems in this scenario.

3.1. Scenario of flow control of MIF hosts

One example of the MIF hosts flow control policy enforement is ANDSF based policy provisioning. As figure 1 illustrated, the MIF host have both WLAN and celluar network connection. ANDSF can push network selection policy to the MIF host. There are three types of policies: 1. Network discovery information. For example, the location of WLAN network information or other access network information. 2. Inter-system mobility policy (ISMP). Those policies for the terminals with no more than one active access network connection. 3. Inter-system routing policy (ISRP). Those policies for the terminals that can have multiple network connections simultaneously.

For the ISMP policies, the MIF host can rely on the connection manager to enforce the network selection policy. For example, if the policy for the MIF host is to select WLAN network, the connection manager can control the terminal to switch on the WLAN interface and disconnect the celluar data connection.

There are flow based policies defined by 3GPP ANDSF specification [TS.24.312]. An IP flow can be identified by source/destination IP address and port number. For ISRP flow based policies, if the terminal and network support IFOM/MAPCON, the enforcement of flow based policy could be implemented by the mechanism provided by IFOM/ MAPCON. But for the non-seamless ISRP flow based policies, there is no standard and well defined interface for implementation. This lead to the difficulties for the operators to deploy the ANDSF flow based policies.

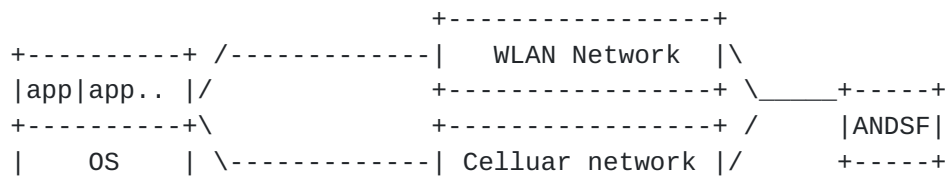

Figure 1. ANDSF based policy provisioning

Another use case for flow based policy control is the user preference. The users may want to set certain rules for a particular application's network usage. For example, the user may want to set the online video app can only be used over WLAN network and the walled-garden application provided by the operator only be used over celluar network. Without a standard and well defined interface, it is difficult to implement those policies.

3.2. Problem analysis of flow based policies for MIF hosts

As discussed in the above scenario, due to the lack of standard and well defined interface, it is difficult and with high complexity to implement the IP flow based policies. There are different ways to cope with problem. For example, similar to the idea of open flow, to define an extended forwarding table in the MIF host and allows the MIF host read forwarding policies from configuration.

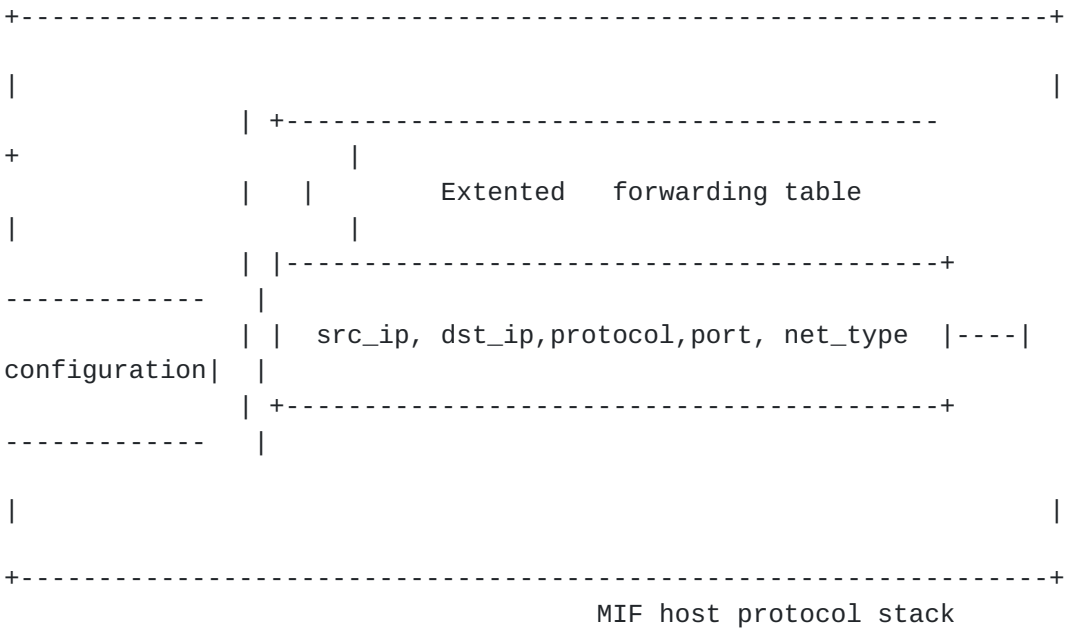

Figure 2. FLow based policy

4. Security Considerations

Security mechanism should be applied to ensure the flow based policy comes from a trusted entity. Detailed security mechanism should be defined in the solution document.

5. IANA Considerations

There is no IANA requirment of this document.

6. References

6.1. Normative References

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997.

6.2. Informative References

[RFC6418] Blanchet, M. and P. Seite, "Multiple Interfaces and Provisioning Domains Problem Statement", RFC 6418, November 2011.

[TS.24.312] 3GPP, "Access Network Discovery and Selection Function (ANDSF) Management Object (MO) ", 3GPP TS 24.312, March 2013.

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