

Instructions for Seamoby and  
Experimental Mobility Protocol IANA Allocations

Status of This Memo

This memo defines an Experimental Protocol for the Internet community. It does not specify an Internet standard of any kind. Discussion and suggestions for improvement are requested. Distribution of this memo is unlimited.

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Abstract

The Seamoby Candidate Access Router Discovery (CARD) protocol and the Context Transfer Protocol (CXTF) are experimental protocols designed to accelerate IP handover between wireless access routers. These protocols require IANA allocations for ICMP type and options, Stream Control Transmission Protocol (SCTP) Payload Protocol Identifiers, port numbers, and registries for certain formatted message options. This document contains instructions to IANA about which allocations are required for the Seamoby protocols. The ICMP subtype extension format for Seamoby has been additionally designed so that it can be utilized by other experimental mobility protocols, and the SCTP port number is also available for other experimental mobility protocols.

## Table of Contents

1. Introduction.....	2
2. Common IPv4 and IPv6 Allocations.....	2
3. IPv4 Allocations.....	3
4. IPv6 Allocations.....	3
5. Candidate Access Router Discovery Protocol Registries.....	3
6. Context Transfer Profile Type Registry.....	5
7. Context Transfer Protocol Authorization Token Calculation Algorithm.....	5
8. ICMP Experimental Mobility Subtype Format and Registry.....	5
9. Utilization by Other Experimental Mobility Protocols.....	6
10. Normative References.....	6
11. Security Considerations.....	7
12. IANA Considerations.....	7

## 1. Introduction

The Seamoby Candidate Access Router Discovery (CARD) protocol [RFC4066] and the Context Transfer Protocol (CTXP) [RFC4067] are experimental protocols designed to accelerate IP handover between wireless access routers. These protocols require IANA allocations for ICMP options and type, SCTP Payload Protocol Identifiers, port numbers, and the establishment of registries for certain formatted message options. Because the protocols are experimental, there is no guarantee that they will ever see widespread deployment in their current form. Consequently, it is prudent to conserve Internet numbering resources that might be needed for other protocols that could see wider deployment. This document contains instructions to IANA for the Seamoby protocols. Additionally, the ICMP subtype extension format has been designed so that it could be used by other experimental mobility protocols.

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 RFC 2119 [RFC2119]. Allocation policy names Specification Required, IETF Consensus Action, and Designated Expert are to be interpreted as described in RFC 2434 [RFC2434].

## 2. Common IPv4 and IPv6 Allocations

IANA has assigned SCTP port numbers 5090 for use by [RFC4066] and 5091 for use of [RFC4067]. See Section 5.2.1 of [RFC4066] for a description of the inter-access router CARD protocol use of SCTP, and Section 3.1 of [RFC4067] for a description of the inter-access router CXTX use of SCTP.

### 3. IPv4 Allocations

IANA has assigned ICMP type 41 for IPv4 identifying ICMP messages utilized by experimental mobility protocols such as Seamoby. See [Section 5.1.1 of \[RFC4066\]](#) for a description of experimental mobility CARD ICMP messages and [Section 3.2 of \[RFC4067\]](#) for the CXTIP ICMP messages, specified by Seamoby. See [Section 9](#) of this document for a description of the experimental mobility protocol ICMP subtype format and initial allocations.

IANA has assigned Mobile IPv4 Foreign Agent Discovery [[RFC3344](#)] option type codes for the following:

Code	Purpose	Reference
137	CARD MN-AR signature option	<a href="#">Section 6.4 of [RFC4066]</a>
138	CARD Request option	<a href="#">Section 5.1.2.1 of [RFC4066]</a>
139	CARD Reply option	<a href="#">Section 5.1.2.2 of [RFC4066]</a>

### 4. IPv6 Allocations

IANA has assigned ICMP type code 150 for IPv6 identifying ICMP messages utilized by experimental mobility protocols such as Seamoby. See [Section 5.1.1 of \[RFC4066\]](#) for a description of experimental mobility CARD ICMP messages and [Section 3.2 of \[RFC4067\]](#) for the CXTIP ICMP messages, specified by Seamoby. See [Section 9](#) of this document for a description of the experimental mobility protocol subtype format and initial allocations.

IANA has assigned IPv6 [RFC 2461](#) Neighbor Discovery [[RFC2461](#)] option type codes for the following:

Code	Purpose	Reference
138	CARD Request option	<a href="#">Section 5.1.2.1 of [RFC4066]</a>
139	CARD Reply option	<a href="#">Section 5.1.2.2 of [RFC4066]</a>

### 5. Candidate Access Router Discovery Protocol Registries

For CARD, two new registries are created that IANA is to maintain, named:

- 1) The AVP Type Registry,
- 2) The Layer 2 Access Technology Identifier Registry.

These are described in the following subsections.

### 5.1. AVP Type Registry

The AVP Type Registry allows for future expansion of the CARD AVP type space to include new AVPs. AVP Type codes are 16 bit unsigned integers. See [Section 5.1.4 of \[RFC4066\]](#) for a description of AVPs.

The registry SHALL be initially populated with the following table:

AVP Name	Type Code
-----	
RESERVED	0x00

Future allocations of AVP type codes will be made through Expert Review, as defined in [RFC 2434](#).

### 5.2. Layer 2 Access Technology Identifier Registry

The Layer 2 Access Technology Identifier registry allows the registration of type codes to uniquely identify specific access technologies in the L2-Type field of the CARD L2 ID sub-option. L2 ID codes are 16 bit unsigned integers. See [Section 5.1.3.1 of \[RFC4066\]](#) for a description of the CARD L2 ID sub-option.

The registry SHALL initially be populated with the following table:

Layer 2 Access Technology	Type Code
-----	
RESERVED	0x00
IEEE 802.3 (Ethernet)	0x01
IEEE 802.11a	0x02
IEEE 802.11b	0x03
IEEE 802.11g	0x04
IEEE 802.15.1 (Bluetooth)	0x05
IEEE 802.15.3	0x06
IEEE 802.15.4	0x07
IEEE 802.16	0x08

Future allocation of Layer 2 Access Technology identifiers will be made by the method of Specification Required, as defined in [RFC 2434](#). All requests for allocations MUST be accompanied by a reference to a technical document in which the design of the Layer 2 access technology is described.

## 6. Context Transfer Profile Type Registry

CXTP requires IANA to maintain a registry named the Context Transfer Profile Type Registry, which is a registry of context Feature Profile Type identifiers. Feature Profile Type identifiers are 16 bit unsigned integers that identify particular types of feature contexts. See [Section 2.4 of \[RFC4067\]](#) for a description of how contexts are carried in CXTP.

The registry SHALL initially be populated with the following table:

Context Profile	Type Code
RESERVED	0x00
IPv6 Multicast Listener Context	0x01

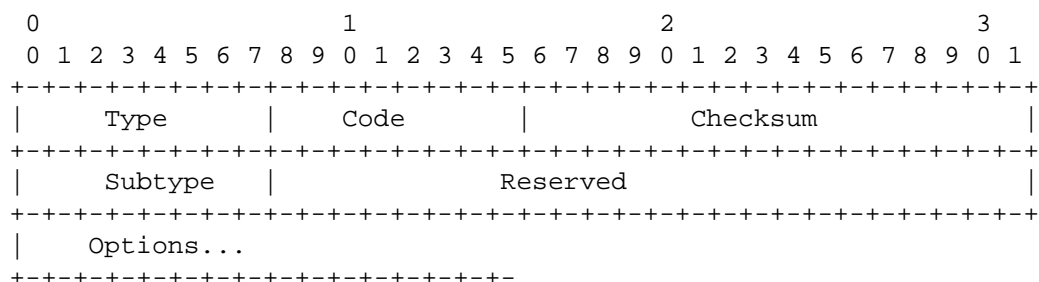
Future allocations of Feature Profile Type codes will be made through Expert Review, as defined in [RFC 2434](#).

## 7. Context Transfer Protocol Authorization Token Calculation Algorithm

In [Section 2.5.4 of \[RFC4067\]](#), CXTP requires an authorization token calculation algorithm indicator. Currently, the only indicator defined is 0x1, for HMAC\_SHA1. Additional algorithms may be added by the method of Specification Required [[RFC2434](#)].

## 8. ICMP Experimental Mobility Subtype Format and Registry

The ICMP Experimental Mobility Type is utilized by CARD and CXTP in the following way. The interpretation of the Code field is as defined by the relevant ICMP standard for IPv4 and IPv6, and does not change. The protocols are free to utilize the Code for their own purposes. The ICMP Experimental Mobility Type defines a one octet subtype field within the ICMP Reserved field that identifies the specific protocol. The ICMP header for the Experimental Mobility Type is:



Type                      For IPv4, 41; for IPv6 150

Code	As defined by the relevant ICMP specification and free for use by the Experimental Mobility protocol.
Checksum	ICMP checksum
Subtype	One octet subtype code identifying the Experimental Mobility protocol
Reserved	Unless otherwise defined by the Experimental Mobility protocol, set to zero by the sender and ignored by the receiver.
Options	As defined by the Experimental Mobility protocol.

IANA SHALL maintain a registry of one octet unsigned integer subtype codes for the Experimental Mobility protocols called the Experimental Mobility Protocol Subtype Registry.

Initial allocations in the registry SHALL be established as follows:

Protocol/Message	Subtype	Reference
-----		
CARD	0	<a href="#">Section 5.1.1 of [RFC4066]</a>
CXTP	1	<a href="#">Section 3.2 of [RFC4067]</a>

Subsequent allocations of subtype codes SHALL be made by the method of Specification Required and IESG Review as defined in [RFC 2434](#).

## 9. Usage by Other Experimental Mobility Protocols

The ICMP Experimental Mobility type code is available for other experimental mobility protocols to use. Other experimental mobility protocols MAY define additional ICMP messages that use code points under the Experimental Mobility ICMP type.

## 10. Normative References

- [RFC2434] Narten, T. and H. Alvestrand, "Guidelines for Writing an IANA Considerations Section in RFCs", [BCP 26](#), [RFC 2434](#), October 1998.
- [RFC2461] Narten, T., Nordmark, E., and W. Simpson, "Neighbor Discovery for IP Version 6 (IPv6)", [RFC 2461](#), December 1998.
- [RFC3344] Perkins, C., "IP Mobility Support for IPv4", [RFC 3344](#), August 2002.

[RFC4066] Liebsch, M., Ed., Singh, A., Ed., Chaskar, H., Funato, D., and E. Shim, "Candidate Access Router Discovery (CARD)", [RFC 4066](#), July 2005.

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

## 11. Security Considerations

There are no security considerations associated with this document.

## 12. IANA Considerations

This entire document is about IANA considerations.

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