

Network Working Group  
Internet-Draft  
Intended status: Experimental  
Expires: July 4, 2012

T. Dreibholz  
University of Duisburg-Essen  
January 01, 2012

**Handle Resolution Option for ASAP**  
**draft-dreibholz-rserpool-asap-hropt-10.txt**

Abstract

This document describes the Handle Resolution option for the ASAP protocol.

Status of this Memo

This Internet-Draft is submitted in full conformance with the provisions of [BCP 78](#) and [BCP 79](#).

Internet-Drafts are working documents of the Internet Engineering Task Force (IETF). Note that other groups may also distribute working documents as Internet-Drafts. The list of current Internet-Drafts is at <http://datatracker.ietf.org/drafts/current/>.

Internet-Drafts are draft documents valid for a maximum of six months and may be updated, replaced, or obsoleted by other documents at any time. It is inappropriate to use Internet-Drafts as reference material or to cite them other than as "work in progress."

This Internet-Draft will expire on July 4, 2012.

Copyright Notice

Copyright (c) 2012 IETF Trust and the persons identified as the document authors. All rights reserved.

This document is subject to [BCP 78](#) and the IETF Trust's Legal Provisions Relating to IETF Documents (<http://trustee.ietf.org/license-info>) in effect on the date of publication of this document. Please review these documents carefully, as they describe your rights and restrictions with respect to this document. Code Components extracted from this document must include Simplified BSD License text as described in Section 4.e of the Trust Legal Provisions and are provided without warranty as described in the Simplified BSD License.

This document may contain material from IETF Documents or IETF Contributions published or made publicly available before November

10, 2008. The person(s) controlling the copyright in some of this material may not have granted the IETF Trust the right to allow modifications of such material outside the IETF Standards Process. Without obtaining an adequate license from the person(s) controlling the copyright in such materials, this document may not be modified outside the IETF Standards Process, and derivative works of it may not be created outside the IETF Standards Process, except to format it for publication as an RFC or to translate it into languages other than English.

## Table of Contents

<a href="#">1.</a>	Introduction . . . . .	<a href="#">3</a>
<a href="#">1.1.</a>	Scope . . . . .	<a href="#">3</a>
<a href="#">1.2.</a>	Terminology . . . . .	<a href="#">3</a>
<a href="#">1.3.</a>	Conventions . . . . .	<a href="#">3</a>
<a href="#">2.</a>	Handle Resolution Option . . . . .	<a href="#">3</a>
<a href="#">2.1.</a>	Definition . . . . .	<a href="#">3</a>
<a href="#">3.</a>	Reference Implementation . . . . .	<a href="#">4</a>
<a href="#">4.</a>	Security Considerations . . . . .	<a href="#">4</a>
<a href="#">5.</a>	IANA Considerations . . . . .	<a href="#">4</a>
<a href="#">6.</a>	Acknowledgments . . . . .	<a href="#">5</a>
<a href="#">7.</a>	References . . . . .	<a href="#">5</a>
<a href="#">7.1.</a>	Normative References . . . . .	<a href="#">5</a>
<a href="#">7.2.</a>	Informative References . . . . .	<a href="#">6</a>
	Author's Address . . . . .	<a href="#">6</a>



## **1. Introduction**

Reliable Server Pooling defines protocols for providing highly available services. The Aggregate Server Access Protocol (ASAP) provides session management and server selection for applications. Upon request for a server selection -- denoted as handle resolution -- an ENRP server returns a list of selected PE identities. The number of PE identities to be returned is not specified by RSerPool. Furthermore the ASAP protocol does not contain a way for letting the requesting instance specify it.

As shown in [[Dre2006](#)], [[IJAIT2009](#)], [[IJHIT2008](#)], selecting too many entries does not make sense for the application, but on the other hand also result in significant processing and network overhead. Furthermore, it has been shown in [[LCN2005](#)] that the number of requested elements is usually 1, but there are application cases where more PE identities have to be returned. That is, there should be a possibility to specify the number of requested PE items upon a handle resolution.

### **1.1. Scope**

The Handle Resolution option defined in this draft simply defines an option to let the PU-side specify the desired number of PE identities from the ENRP server.

### **1.2. Terminology**

The terms are commonly identified in related work and can be found in the Aggregate Server Access Protocol and Endpoint Handlespace Redundancy Protocol Common Parameters document [RFC 5354](#) [[RFC5354](#)].

### **1.3. Conventions**

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. Handle Resolution Option**

### **2.1. Definition**

The Handle Resolution MAY be used once in an ASAP Handle Resolution message sent from a PU to an ENRP server. It is defined as follows.



```

0          1          2          3
0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
|          Type = 0x803f          |          Length=8          |
+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
|                                Items                            |
+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+

```

Items: 32 bits (unsigned integer)

Contains the number of PE identities to be selected by the ENRP server. Setting it to 0xffffffff denotes to obtain as many PE identities as possible. A setting of 0 denotes to use the ENRP server's default value; this default MUST be used if there is no Handle Resolution option given. The ENRP server SHOULD try to fulfil the request for the given number of items.

Note, that the high-order bits of the type field are set to 10, which means "skip this parameter and continue processing" if this parameter type is not supported by the ENRP server. This allows for interoperability with old implementations.

### 3. Reference Implementation

The RSerPool reference implementation RSPLIB can be found at [\[RSerPoolPage\]](#). It supports the functionalities defined by [\[RFC5351\]](#), [\[RFC5352\]](#), [\[RFC5353\]](#), [\[RFC5354\]](#) and [\[RFC5356\]](#) as well as the options [\[I-D.dreibholz-rserpool-delay\]](#), [\[I-D.dreibholz-rserpool-enrp-takeover\]](#) and of course the option defined by this document. An introduction to this implementation is provided in [\[Dre2006\]](#).

### 4. Security Considerations

Security considerations for RSerPool systems are described by [\[RFC5355\]](#).

### 5. IANA Considerations

This document does not require additional IANA actions beyond those already identified in the ENRP and ASAP protocol specifications.



## 6. Acknowledgments

The author would like to thank Nihad Cosic, Dirk Hoffstadt, Michael Kohnen, Jobin Pulinthanath and Xing Zhou for their support.

## 7. References

### 7.1. Normative References

- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.
- [RFC5351] Lei, P., Ong, L., Tuexen, M., and T. Dreibholz, "An Overview of Reliable Server Pooling Protocols", [RFC 5351](#), September 2008.
- [RFC5352] Stewart, R., Xie, Q., Stillman, M., and M. Tuexen, "Aggregate Server Access Protocol (ASAP)", [RFC 5352](#), September 2008.
- [RFC5353] Xie, Q., Stewart, R., Stillman, M., Tuexen, M., and A. Silverton, "Endpoint Handlespace Redundancy Protocol (ENRP)", [RFC 5353](#), September 2008.
- [RFC5354] Stewart, R., Xie, Q., Stillman, M., and M. Tuexen, "Aggregate Server Access Protocol (ASAP) and Endpoint Handlespace Redundancy Protocol (ENRP) Parameters", [RFC 5354](#), September 2008.
- [RFC5355] Stillman, M., Gopal, R., Guttman, E., Sengodan, S., and M. Holdrege, "Threats Introduced by Reliable Server Pooling (RSerPool) and Requirements for Security in Response to Threats", [RFC 5355](#), September 2008.
- [RFC5356] Dreibholz, T. and M. Tuexen, "Reliable Server Pooling Policies", [RFC 5356](#), September 2008.
- [I-D.dreibholz-rserpool-delay] Dreibholz, T. and X. Zhou, "Definition of a Delay Measurement Infrastructure and Delay-Sensitive Least-Used Policy for Reliable Server Pooling", [draft-dreibholz-rserpool-delay-08](#) (work in progress), July 2011.
- [I-D.dreibholz-rserpool-enrp-takeover] Dreibholz, T. and X. Zhou, "Takeover Suggestion Flag for the ENRP Handle Update Message",





[draft-dreibholz-rserpool-enrp-takeover-06](#) (work in progress), July 2011.

## 7.2. Informative References

- [Dre2006] Dreibholz, T., "Reliable Server Pooling - Evaluation, Optimization and Extension of a Novel IETF Architecture", March 2007.
- [IJAIT2009] Dreibholz, T. and E. Rathgeb, "Overview and Evaluation of the Server Redundancy and Session Failover Mechanisms in the Reliable Server Pooling Framework", International Journal on Advances in Internet Technology (IJAIT), Volume 2, Number 1, Pages 1-14, ISSN 1942-2652, June 2009.
- [IJHIT2008] Dreibholz, T. and E. Rathgeb, "An Evaluation of the Pool Maintenance Overhead in Reliable Server Pooling Systems", SERSC International Journal on Hybrid Information Technology (IJHIT), Volume 1, Number 2, Pages 17-32, ISSN 1738-9968, April 2008.
- [LCN2005] Dreibholz, T. and E. Rathgeb, "On the Performance of Reliable Server Pooling Systems", Proceedings of the IEEE Conference on Local Computer Networks (LCN) 30th Anniversary, Pages 200-208, ISBN 0-7695-2421-4, DOI 10.1109/LCN.2005.98, November 2005.
- [RSerPoolPage] Dreibholz, T., "Thomas Dreibholz's RSerPool Page", 2011.

## Author's Address

Thomas Dreibholz  
University of Duisburg-Essen, Institute for Experimental Mathematics  
Ellernstrasse 29  
45326 Essen, Nordrhein-Westfalen  
Germany

Phone: +49-201-1837637  
Fax: +49-201-1837673  
Email: dreibh@iem.uni-due.de  
URI: <http://www.iem.uni-due.de/~dreibh/>

